



# **NAVAL POSTGRADUATE SCHOOL**

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## **THESIS**

**WHY KEEP CHANGING? EXPLAINING THE  
EVOLUTION OF SINGAPORE'S MILITARY  
STRATEGY SINCE INDEPENDENCE**

by

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March 2017

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MILITARY STRATEGY SINCE INDEPENDENCE**

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## **ABSTRACT**

Singapore has not been involved in any wars since WWII. Beginning in the late 1970s, the small island-state has been doing well; its economy is flourishing, and its relations with its regional neighbors and the international community have been steadily strengthening. Yet, in the past 50 years since independence in 1965, Singapore's military strategy has undergone two distinct shifts, evolving from the Poisonous Shrimp to the Porcupine in the early 1980s, and then finally to the Dolphin in the early 2000s. What drove these shifts? This thesis takes a historical analysis approach in investigating the evolution of Singapore's military strategy, studying each shift as a unique case study.

By comparing the two shifts, the thesis identifies three key factors that have driven the evolution of Singapore's military strategy: change of security environment, change of economic conditions, and to a lesser extent, change of international norms and expectations. The evidence examined supports the argument that the change of security environment was the underlying driving force for the first shift, while the change of economic conditions was the main cause of the second shift. These insights facilitate better understanding of Singapore's security priorities and its focus on peaceful co-existence.

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## **LIST OF ACRONYMS AND ABBREVIATIONS**

1G SAF	1st Generation Singapore Armed Forces
2G SAF	2nd Generation Singapore Armed Forces
3G SAF	3rd Generation Singapore Armed Forces
HADR	Humanitarian Aid and Disaster Relief
MAF	Malaysian Armed Forces
PAP	People's Action Party
RMA	Revolution in Military Affairs
RSAF	Republic of Singapore Air Force
RSN	Republic of Singapore Navy
SAF	Singapore Armed Forces
SLOC	Sea Lines of Communication

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## I. INTRODUCTION

In August 1965, Singapore “unexpectedly” gained independence after a “bitter separation” from the Malaysian Federation and was left to find the means to survive the harsh realities of the world, a task the young nation was neither equipped nor prepared for.<sup>1</sup> Economically, the island-state lacked natural resources and was heavily dependent on Malaysia for trade; as a nation, it was fragile and surrounded by hostile Malay neighbors.<sup>2</sup> The sudden withdrawal of British troops by the late 1960s created a deep sense of abandonment among Singapore’s leaders and exacerbated the nation’s security challenges.<sup>3</sup> These circumstances contributed to Singapore’s realist worldview and obsession with the “twin themes of survival and vulnerability”<sup>4</sup> that dominated the young nation’s post-independence era and continue to influence its policies even to this day. Vulnerable and desperate at independence, Singapore had to protect its national interests, and it needed a solution quickly. With the help of Israel, the Singapore Armed Forces (SAF) was developed from scratch, and it became the core of what was unofficially described by the nation’s leaders and scholars alike as the “Poisonous Shrimp” strategy, designed “to provide for Singapore’s basic defense.”<sup>5</sup>

As Singapore’s security environment and economic conditions evolved, its military strategy underwent two distinct shifts. In the 1980s, it adopted a new strategy known as the “Porcupine,” and in the early 2000s it replaced that strategy with one that has been labeled the “Dolphin.” This thesis describes each of these three strategies and offers an explanation for the two shifts in Singapore’s military strategy. In doing so, this

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<sup>1</sup> Narayanan Ganesan, “Singapore: Realist-cum-Trading State,” in *Asian Security Practice: Material and Ideational Influences*, ed. Muthiah Alagappa (Stanford: Stanford University Press, 1998), 585, 591, 586.

<sup>2</sup> Ibid., 579.

<sup>3</sup> Marsita Omar and Fook Weng Chan, “British Withdrawal from Singapore,” Singapore Infopedia, National Library Board, accessed June 13, 2016, [http://eresources.nlb.gov.sg/infopedia/articles/SIP\\_1001\\_2009-02-10.html](http://eresources.nlb.gov.sg/infopedia/articles/SIP_1001_2009-02-10.html).

<sup>4</sup> Ganesan, “Singapore: Realist-cum-Trading State,” 586.

<sup>5</sup> “History of the MINDEF/SAF,” MINDEF, accessed June 13, 2016, [http://www.mindef.gov.sg/imindef/about\\_us/history/overview.html#tab-4](http://www.mindef.gov.sg/imindef/about_us/history/overview.html#tab-4).

thesis explores the unique relationship between changes in security environment and economic conditions as the two most important factors driving the evolution of Singapore's military strategy. It argues that while the change of Singapore's security environment drove the first shift, it was supported by the country's growing economy, which though important, was not developed enough during the 1970s to influence Singapore's military strategy directly. With consistent growth, however, Singapore's economy matured considerably by the 1990s, causing the country's economic interests to become increasingly integrated with its security priorities and thus its military strategy. As such, the change of economic conditions emerged as the lead driving force in the second shift and had an immense impact in shaping the Dolphin strategy. These observations show that despite the consistent geographical and strategic realities that amplify the importance of a country's security environment in shaping its military strategy particularly at independence, changes in economic conditions can potentially have a similar impact once the potential of its economy has been sufficiently realized; this finding is particularly insightful when conducting studies on other developing countries that share similar characteristics with Singapore.

## **A. MAJOR RESEARCH QUESTION**

Singapore has not been involved in any wars since WWII, yet in the past 50 years the small island-state has been consistently enhancing its security, resulting in two shifts in its military strategy. Since the nation-state's independence in 1965, besides "the Indonesian Confrontation against Malaysia and Singapore, and Vietnam's invasion of Cambodia, Southeast Asia has otherwise been relatively free of intra-regional wars."<sup>6</sup> Regionally, Zachary Abuza asserts that by the early 1990s, "Southeast Asia was arguably at its most secure point in the post-Second World War era."<sup>7</sup> At the bilateral front, though Singapore's relations with its immediate neighbors—Indonesia and Malaysia—started out badly, they have since improved considerably. Domestically, analysts also agree that

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<sup>6</sup> Bernard Fook Weng Loo, "Transforming the Strategic Landscape of Southeast Asia," *Contemporary Southeast Asia: A Journal of International and Strategic Affairs* 27, no. 3 (2005): 398.

<sup>7</sup> Zachary Abuza, "Hardening National Security: Emergence of an Agile Scorpion," in *Impressions of the Goh Chok Tong Years in Singapore*, ed. Bridget Welsh (Singapore: NUS Press, 2009), 188.



there is a level of consistency in the Singaporean leadership, its concept of national security, and its approach toward threats. Against such a setting, the fact that Singapore's military strategy has undergone any change, let alone two realignments, invites further research. Scholars have tried to explain the shifts in Singapore's military strategy, but their analyses have varied. **What then, are the key factors that best explain the shifts in Singapore's military strategy?** It would be interesting to see if and how these key factors continue to drive future changes in the evolution of the nation-state's military strategy.

## **B. SIGNIFICANCE OF THE RESEARCH QUESTION**

Much research and analysis have been conducted on Singapore's military strategy, especially on the shift from Poisonous Shrimp to Porcupine; in comparison, however, studies on the shift to the Dolphin are less comprehensive, perhaps because it is more recent. Also, besides Bernard Loo, few others have attempted to address both shifts in a single piece of work, and even then, Loo's discussion of the two shifts was kept broad and did not take a comparative approach since that was not the purpose of his contribution.<sup>8</sup> As Singapore has been independent for more than 50 years, this paper contributes academically as a review and consolidation of key explanations by various analysts. In addition, by comparing the first shift with the second, this thesis seeks to uncover consistent themes that could help predict a potential third shift in the evolutionary process of Singapore's military strategy.

According to Bilahari Kausikan, Singapore's ambassador-at-large and policy advisor in the Ministry of Foreign Affairs, "Small countries will always have fewer options and operate on narrower margins than big countries, but rich small countries will have more options than poor small countries."<sup>9</sup> Singapore is a rich small country today; being small is a consistent factor for the nation-state, but it was not always rich and may

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<sup>8</sup> Bernard Fook Weng Loo discussed the two shifts in his article: "Maturing the Singapore Armed Forces: From Poisonous Shrimp to Dolphin," in *Impressions of the Goh Chok Tong Years in Singapore*, ed. Bridget Welsh (Singapore: NUS Press, 2009), 178–187.

<sup>9</sup> Bilahari Kausikan, "Dealing with An Ambiguous World," *The Middle Ground*, May 26, 2016, <http://themiddleground.sg/2016/05/26/dealing-ambiguous-world>.

not necessarily remain rich. The research question contributes to the understanding of the available options and factors that shaped Singapore's military strategy as the country grew stronger economically. It thus also provides insights as to how Singapore's military strategy may be influenced by periods of economic crisis, or if the island-state loses its wealth.

Finally, the strategic location of Singapore and its international hub status make it an important actor in the maintenance of security and economic stability in Southeast Asia as well. Understanding what has driven the evolution of Singapore's military strategy contributes to the predictability of its intentions and actions; this understanding will help guide policy making among its neighbors, in particular Malaysia and Indonesia, to which Singapore's "foreign policy has often invited criticisms about its alleged self-aggrandizement at the expense of the region."<sup>10</sup>

## **C. LITERATURE REVIEW**

This literature review organizes existing work on Singapore's military strategy into three sections. First, interpretations of what leading scholars agree are the key features of each zoological analogy are summarized, framing the foundational conditions for the subsequent sections. Second, key explanations for each of the two changes in military strategy are examined and compared for dominant themes that can help formulate hypotheses. Third, key assessments and critiques of the literature are presented as a lead up to the hypotheses.

### **1. Examining Each Evolutionary Stage of Singapore's Military Strategy**

Across the literature examined, two interconnected and recurring themes stood out. First, though never explicitly defined by government officials or scholars, the centrality of the SAF in these analogies is evident. This paper agrees with Loo that the SAF's "three processes of evolutionary change"<sup>11</sup> were almost in tandem with the

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<sup>10</sup> See Seng Tan, "Mailed Fists and Velvet Gloves: The Relevance of Smart Power to Singapore's Evolving Defense and Foreign Policy," *Journal of Strategic Studies* 38, no. 3 (2015): 333.

<sup>11</sup> Bernard Fook Weng Loo, "The Management of Military Change: The Case of the Singapore Armed Forces," in *Security, Strategy and Military Change in the 21st Century: Cross-Regional Perspectives*, eds. Jo Inge Bekkevold, Ian Bowers, and Michael Raska (New York: Routledge, 2015), 70.

declaratory shifts in zoological analogies, and as such, it is almost “possible to [synonymously] associate the three analogies with the three generations of evolution of the SAF.”<sup>12</sup> Second, scholars and Singaporean leaders alike interchangeably refer to the analogies as the SAF’s acquired capabilities, intended use, and projected image and posture. The zoological analogies represent more than just the SAF’s posture or image; they are also not intended as a representation of Singapore’s overarching national defense responsibility undertaken by Total Defense,<sup>13</sup> of which military is one component out of five.<sup>14</sup> As such, for the purpose and scope of this paper, the analogies are defined as military strategies, thereby limiting the scope of research to how the SAF would be utilized to achieve its stated mission “to enhance Singapore’s peace and security through deterrence and diplomacy, and should these fail, to secure a swift and decisive victory over the aggressor.”<sup>15</sup> The rest of this section summarizes what leading scholars agree are the key characteristics of each zoological analogy.

**a. *Poisonous Shrimp—1960s to 1980s***

Singapore’s founding Prime Minister Lee Kuan Yew first introduced the analogy of the Poisonous Shrimp saying, “In a world where the big fish eat small fish and the small fish eat shrimps, Singapore must become a poisonous shrimp.”<sup>16</sup> According to Tim Huxley, “Singapore [eventually] used the analogy of poisonous shrimp (small, but digestible by predators) to describe its military strategy.”<sup>17</sup> The strategy was centered on the Israeli-influenced “1st Generation SAF”<sup>18</sup> (1G SAF) that was “defensively oriented

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<sup>12</sup> Loo, “The Management of Military Change,” 70.

<sup>13</sup> See Seng Tan, “Mailed Fists and Velvet Gloves,” 335.

<sup>14</sup> “The 5 Pillars of Total Defense,” MINDEF, accessed June 13, 2016, [http://www.mindef.gov.sg/imindef/mindef\\_websites/topics/totaldefence/about\\_us/5\\_Pillars.html](http://www.mindef.gov.sg/imindef/mindef_websites/topics/totaldefence/about_us/5_Pillars.html).

<sup>15</sup> “Mission,” MINDEF, accessed June 13, 2016, [http://www.mindef.gov.sg/imindef/about\\_us/mission.html](http://www.mindef.gov.sg/imindef/about_us/mission.html).

<sup>16</sup> Tommy Koh, “A World Statesman,” *Straits Times*, accessed June 13, 2016, <http://leekuaneyew.straitstimes.com/ST/chapter3.html>.

<sup>17</sup> Tim Huxley, *Defending the Lion City: The Armed Forces of Singapore*, (New South Wales, Australia: Allen & Unwin, 2003), 56.

<sup>18</sup> “History of the MINDEF/SAF,” MINDEF, accessed June 13, 2016, [http://www.mindef.gov.sg/imindef/about\\_us/history/overview.html#tab-4](http://www.mindef.gov.sg/imindef/about_us/history/overview.html#tab-4); Michael Raska, *Military Innovation in Small States: Creating a Reverse Asymmetry* (New York: Routledge, 2015), 146.

and based on an infantry-dominated army.”<sup>19</sup> Though not Singapore’s initial model of choice, no other country was willing to offer military assistance. Nonetheless, the island-state’s leaders were “impressed that Israel was able to survive despite outright hostility from its much larger neighbors”<sup>20</sup> and were convinced that Singapore would benefit from the Israelis’ guidance.

Up to the mid-1970s, the SAF was made up of a “large citizen army based on universal but mainly part-time conscription,” a small but “largely professional air force,” and a “semi-regular navy”<sup>21</sup> that was equipped with a few small boats that limited its function to coastal patrols. Limited by the capabilities of the 1G SAF, the idea of the Poisonous Shrimp was modest, centered primarily on deterrence by raising “an aggressor’s cost of attacking Singapore to such an undesirable level that no country would consider invading it.”<sup>22</sup> The problem with the Poisonous Shrimp, however, was that it was “defeatist”<sup>23</sup> in the sense that the fall of the nation-state was considered inevitable in war even though the aggressor might also take considerable damage. Such a position would gradually become less acceptable as Singapore progressed as a country.

***b. Porcupine—1980s to Early 2000s***

As Singapore developed and grew economically, its leaders introduced a different strategy to protect the nation’s strategic interests, shifting from a “counter-insurgency doctrine to a more conventional military posture.”<sup>24</sup> In 1983, Goh Chok Tong, then Singapore’s Minister of Defense and Second Minister for Health used the Porcupine analogy in a speech to emphasize the necessity for Singapore to enhance its

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<sup>19</sup> Huxley, *Defending the Lion City*, 56.

<sup>20</sup> Andrew Tan, “Singapore’s Defense: Capabilities, Trends, and Implications,” *Contemporary Southeast Asia* 21, no. 3 (1999): 454.

<sup>21</sup> Huxley, *Defending the Lion City*, 23.

<sup>22</sup> Pak Shun Ng, “From Poisonous Shrimp to Porcupine: An Analysis of Singapore’s Defense Posture Change in the Early 1980s,” (working paper, Canberra: Strategic and Defense Studies Centre, The Australian National University, 2005), 1.

<sup>23</sup> Loo, “Maturing the Singapore Armed Forces,” 179.

<sup>24</sup> Bernard Fook Weng Loo, “New Problems, New Answers? The Revolution in Military Affairs in an Era of Changing Security Concerns,” National Institute of Defense Studies, accessed June 13, 2016, [http://www.nids.go.jp/english/event/symposium/pdf/2005/e2005\\_04.pdf](http://www.nids.go.jp/english/event/symposium/pdf/2005/e2005_04.pdf).

survivability.<sup>25</sup> By the early 1990s, it became evident that the way the Porcupine strategy sought to achieve enhanced survivability was through the projection of “at least limited military power (the porcupine’s quills) at some distance from its shores,”<sup>26</sup> so as to defeat the enemy in its own territory; this was a distinct shift from the Poisonous Shrimp that provided only two options as a strategy: “suicide or surrender.”<sup>27</sup> Analysts agreed that Singapore’s rapid economic growth helped the Porcupine strategy achieve its new objectives, funding the required capability upgrades in the Singapore Army, Republic of Singapore Navy (RSN), and Republic of Singapore Air Force (RSAF), which formed the “2nd Generation SAF” (2G SAF).<sup>28</sup>

The 2G SAF was an integral part of the Porcupine strategy, shaped by the specific requirements the Porcupine was designed to address. Andrew Tan accurately described the 2G SAF to be “largely modeled on the Israeli Defense Force, with its emphasis on air superiority, armor, and pre-emptive defense.”<sup>29</sup> In particular, the upgrade of the RSAF with “early warning capabilities and long-range striking power”<sup>30</sup> was congruent with the shift in strategy “from a defensive deterrence policy to a more active deterrence alternative”<sup>31</sup> that was capable of “preemptive”<sup>32</sup> strikes to deliver a “knock-out punch in round one.”<sup>33</sup> Loo asserted that the “preemptive posture envisaged by the Porcupine meant that in the event of hostilities, the SAF would strike first, establish the front line in the likely enemy’s territory and prevent the enemy from being able to bring fire power to bear on the population and economic centers of Singapore.”<sup>34</sup> To achieve this, the Porcupine strategy had to rely heavily on the strength of Singapore’s air force and armor

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<sup>25</sup> Loo, “New Problems, New Answers?”

<sup>26</sup> Raska, *Military Innovation in Small States*, 146.

<sup>27</sup> Huxley, *Defending the Lion City*, 57.

<sup>28</sup> “History of the MINDEF/SAF,” MINDEF, accessed June 13, 2016, [http://www.mindef.gov.sg/imindef/about\\_us/history/overview.html#tab-4](http://www.mindef.gov.sg/imindef/about_us/history/overview.html#tab-4); Raska, *Military Innovation in Small States*, 146.

<sup>29</sup> Andrew Tan, “Singapore’s Defense: Capabilities, Trends, and Implications,” 457.

<sup>30</sup> Huxley, *Defending the Lion City*, 23.

<sup>31</sup> Ng, *From Poisonous Shrimp to Porcupine*, 1.

<sup>32</sup> Loo, “Maturing the Singapore Armed Forces: From Poisonous Shrimp to Dolphin,” 180.

<sup>33</sup> Huxley, *Defending the Lion City*, 57.

<sup>34</sup> Loo, “The Management of Military Change,” 74.

capabilities. Nevertheless, there was also a new emphasis on building a credible navy capable of conducting limited “sea denial”<sup>35</sup> missions and dealing with threats to maritime security and seaborne trade. This emphasis reflected the island-state’s growing focus on the maritime domain beginning from the late 1970s.

**c. *Dolphin —2000s to Present***

By the 2000s, bolstered by consistent economic growth, Singapore’s military strategy evolved into the Dolphin, in tandem with the development of the “3rd Generation SAF”<sup>36</sup> (3G SAF). Analysts have agreed that the Dolphin strategy, with the 3G SAF as its core, is characterized by the use of “intelligence, speed, and maneuverability in a spectrum of diverse missions: from defense diplomacy and operations other than war to kinetic precision strike capabilities conducted further afield from the immediate environment of Singapore.”<sup>37</sup> While the Porcupine focused on conventional force projection and preemption, the Dolphin has focused on integrated “joint operations”<sup>38</sup> and “full-spectrum dominance”<sup>39</sup>—or “military-speak for the ability to do everything on all fronts and do it well.”<sup>40</sup> At the same time, this strategy still retains a strong focus on deterrence, albeit in a more sophisticated manner. In this regard, the Dolphin took the approach of “preventive deterrence” centered on building shared awareness, regional confidence, and stronger relations through leading regional security initiatives and Humanitarian Aid and Disaster Relief (HADR) efforts. The idea is that through defense diplomacy, regional and extra-regional states will not be threatened by a

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<sup>35</sup> Swee Lean Collin Koh, “Seeking Balance: Force Projection, Confidence Building, and the Republic of Singapore Navy,” *Naval War College Review* 65, no.1 (2012): 81.

<sup>36</sup> “History of the MINDEF/SAF,” MINDEF, accessed June 13, 2016, [http://www.mindef.gov.sg/imindef/about\\_us/history/overview.html#tab-4](http://www.mindef.gov.sg/imindef/about_us/history/overview.html#tab-4); Raska, *Military Innovation in Small States*, 146.

<sup>37</sup> Raska, *Military Innovation in Small States*, 146.

<sup>38</sup> Loo, “Maturing the Singapore Armed Forces,” 181.

<sup>39</sup> Benson Chian, “Should the SAF Maintain its Existing Focus on Full-Spectrum Dominance or, Should the Organisation Return to its Core Deterrence and War-Fighting Mission?” *POINTER, Journal of The Singapore Armed Forces*, MINDEF, vol. 4, no. 2 (2015): 33. [https://www.mindef.gov.sg/content/dam/imindef\\_media\\_library/graphics/pointer/PDF/2015/Vol.41%20No.2/4%29%20V41N2\\_Should%20The%20SAF%20Maintain%20Its%20Existing%20Focus%20On%20Full%20Spectrum%20Dominance%20Or%20Should%20The%20Organisation%20Return%20To%20Its%20Core%20De.pdf](https://www.mindef.gov.sg/content/dam/imindef_media_library/graphics/pointer/PDF/2015/Vol.41%20No.2/4%29%20V41N2_Should%20The%20SAF%20Maintain%20Its%20Existing%20Focus%20On%20Full%20Spectrum%20Dominance%20Or%20Should%20The%20Organisation%20Return%20To%20Its%20Core%20De.pdf).

<sup>40</sup> Tan, “Mailed Fists and Velvet Gloves,” 353.

successful Singapore and instead will find it in their own interests to contribute to Singapore's continued stability and success so as to reap mutual benefits. This strategy thereby prevents any thoughts of harming the island-state to even take shape.

At the same time, the Dolphin strategy, enabled by the enhanced capabilities and reach of the 3G SAF, was also designed to deal with emerging threats like piracy and terrorism, and to protect Singapore's economic interests at the global stage. To achieve this, the Dolphin strategy incorporated a significant increase in maritime focus. The RSN inevitably began to play a bigger role, because "compared to air and land forces, navies are an inherently flexible instrument of the state which can be used in war and in peacetime to further a state's interests."<sup>41</sup> Nonetheless, the Dolphin strategy still retained a potentially aggressive deterrent factor with its "emphasis on swift and agile attacks upon its foes, much as dolphins are said to strike at sharks"<sup>42</sup> when required. Backed by the SAF's technologically superior capabilities, the Dolphin strategy also expanded its maritime scope from "sea denial [in the Porcupine] in local waters to limited, defensive sea control."<sup>43</sup>

The summary of the key characteristics of the Poisonous Shrimp, the Porcupine, and the Dolphin strategies are presented in Table 1.

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<sup>41</sup> Andrew Tan, "The Emergence of Naval Power in the Straits of Malacca," *Defense Studies*, 12:1, 120, DOI: 10.1080/14702435.2012.683975

<sup>42</sup> Jonathon Gad, "Poison Shrimp, Porcupines, and Dolphins: Singapore Is Packing Some Serious Heat," Vice News (Blog), accessed August 29, 2016, <https://news.vice.com/article/poison-shrimp-porcupines-and-dolphins-singapore-is-packing-some-serious-heat>.

<sup>43</sup> Koh, "Seeking Balance," 79.

Table 1. Evolution of Singapore's Military Strategy—Summary of Characteristics

<u>Strategy</u>	<u>Threats Designed to Address</u>	<u>Key Focus</u>	<u>Type of Deterrence</u>	<u>Primary Executing Service</u>
<b>"Poisonous Shrimp"</b> (late 1960s – early 1980s)	Conventional military threats	1. Basic defense and survival: • Prevent successful invasion	<u>Passive Deterrence:</u> • Strong defensive military capability • Infantry-centric • Fight in own territory • Cause substantial damage to enemy	Army
<b>"Porcupine"</b> (early 1980s – early 2000s)	Conventional military threats	1. Enhanced survivability: • Enhanced deterrence factor • Creation of strategic depth  2. Establishment of regional political space: • Superior military capabilities	<u>Active Deterrence:</u> • Strong pre-emptive military capability • Armor and air strikes • Fight in enemy territory; limited sea denial • Win the war or cause unacceptable damage to enemy • Limited protection of economic interests	RSAF
<b>"Dolphin"</b> (early 2000s – present)	Conventional military and Non-Conventional threats	1. Enhanced survivability: • Enhanced strategic depth • Full-Spectrum dominance  2. Establishment of international political space • Defense diplomacy	<u>Preventive Deterrence:</u> • Overwhelming military superiority • Network-centric and Joint operations • Capable of dealing with non-conventional threats  • Fight in enemy territory; limited sea control • Cooperation and confidence building • Information and intelligence sharing • HADR and OOTW  • Prevent thought of harming Singapore to even take shape • Improved protection of economic interests	RSN

## 2. Explaining the Changes in Singapore's Military Strategies

There were two distinct shifts in Singapore's military strategy since independence in 1965; the first took place during the 1980s, and the second in the early 2000s.

### a. *The First Shift—From Poisonous Shrimp to Porcupine*

Analysts have identified two main factors that drove the shift from the Poisonous Shrimp to the Porcupine strategy: change of security environment and change of economic conditions.

#### (1) Change of Security Environment

The security vacuum created by the departure of the British, combined with bilateral and regional tensions in the 1970s, amplified Singapore's sense of vulnerability



to external threats,<sup>44</sup> driving the first shift in the evolution of Singapore's military strategy. Deterioration of sub-regional relations, in particular, with Malaysia and to a lesser extent Indonesia,<sup>45</sup> had an immense influence in shaping Singapore's military strategy. Analysts viewed Malaysia as the main threat to Singapore's security due to its geographical proximity and historical relations leading to Singapore's independence; other strategic concerns also added to Singapore's sense of vulnerability. For example, Malaysia's consistent "threats to [turn off] Singapore's vital water supplies"<sup>46</sup> whenever there are disagreements has exacerbated these concerns.<sup>47</sup> Malaysia and Indonesia have also tended to assert political pressure on newly independent Singapore to influence its foreign policies. The Poisonous Shrimp strategy was inadequate to effectively deter these sub-regional threats. In response, Singapore's leadership was convinced that a new strategy was required, one that could not only deter invasion but also "deter military, political, or economic pressure from regional states."<sup>48</sup>

Beyond the sub-region, new types of threats were emerging that also reinforced the need for a new strategy to replace the "Poisonous Shrimp." Andrew Tan describes the 1970s as a period of "heightened political instability"<sup>49</sup> in Southeast Asia, characterized by "changed geopolitical realities."<sup>50</sup> Andrew Tan and Derek Da Cunha support the argument that Southeast Asia was threatened by the Soviet's export of revolution and communist ideas.<sup>51</sup> In particular, Soviet aircraft activity out of Cam Ranh Bay in Vietnam triggered concerns for regional security, which would have an impact on Singapore as well.<sup>52</sup> Threats from extra-regional powers also extended to the maritime

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<sup>44</sup> Huxley, *Defending the Lion City*, 12; Loo, "Maturing the Singapore Armed Forces: From Poisonous Shrimp to Dolphin," 179.

<sup>45</sup> Huxley, *Defending the Lion City*, 44–55.

<sup>46</sup> Raska, *Military Innovation in Small States*, 142.

<sup>47</sup> Lee, "The Water Issue Between Singapore and Malaysia," 1.

<sup>48</sup> Huxley, *Defending the Lion City*, 249.

<sup>49</sup> Tan, "Singapore's Defense: Capabilities, Trends, and Implications," 458.

<sup>50</sup> Ibid.

<sup>51</sup> Derek Da Cunha, "Major Asian Powers and the Development of the Singaporean and Malaysian Armed Forces," *Contemporary Southeast Asia* 13, no. 1 (1991): 59.

<sup>52</sup> Ibid., 62.

domain. Huxley and Da Cunha assert that the growth in maritime trade during the late 1970s resulted in extra-regional navies also seeking to expand their influence in Southeast Asia, adding to Singapore's security challenges and thus were viewed with caution. The change of Singapore's security environment in the early 1970s thus revealed crucial weaknesses in the army-centric and defense-focused Poisonous Shrimp strategy, making the shift to the Porcupine necessary.

## (2) Change of Economic Conditions

Economic factors also contributed to the evolution of Singapore's military strategy from the Poisonous Shrimp to the Porcupine, albeit more significantly in a supporting role. To Loo, the shift to the Porcupine strategy was "underpinned by rapid economic growth, which provided increasing economic power and a corresponding increase in defense spending."<sup>53</sup> Besides funding military capability development, Huxley asserts that economic development made Singapore "vitally dependent on foreign investment."<sup>54</sup> Thus, the nation had to make changes to its military strategy to enhance its security and deterrence profile to secure investor confidence. Any "loss of confidence in the republic's stability or security would seriously damage its economic health."<sup>55</sup> The defeatist nature of the original strategy did not instill confidence and had to be replaced by one that was able to take the fight to the adversary in a quick and decisive battle. Such requirements thus shaped the Porcupine strategy's focus on pre-emptive strikes, backed by strong air force and armor capabilities.

As a result of global economic growth, the maritime domain became increasingly important to Singapore in the late 1970s. Huxley asserts that because Singapore is an island-state heavily dependent on seaborne trade, secure Sea Lines of Communication (SLOC) and uninterrupted maritime trade are vital not just to its economy, but to its very existence as a sovereign state as well.<sup>56</sup> Unfortunately, access to and from the island-state

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<sup>53</sup> Loo, "Maturing the Singapore Armed Forces: From Poisonous Shrimp to Dolphin," 180.

<sup>54</sup> Huxley, *Defending the Lion City*, 32.

<sup>55</sup> Ibid.

<sup>56</sup> Ibid., 31–32.

and the “high seas, on which it depends for 85 percent of its trade,”<sup>57</sup> are through Malaysian and Indonesian waters.<sup>58</sup> Thus, Singapore’s military strategy would need a more credible navy and maritime focus to protect its expanding maritime interests, growing economy, and foreign investments. As Singapore’s economy developed in the 1970s, there was more impetus for a change to a new strategy as not only could the country now afford to upgrade the SAF, it also had more at stake; economic considerations were thus gradually becoming more influential in shaping Singapore’s military strategy.

***b. The Second Shift—From Porcupine to Dolphin***

Analysts agree that the shift to the Dolphin strategy occurred amid unprecedented regional peace and stability. In terms of meeting its military objectives, the Porcupine seemed relatively successful and did not warrant much, if any, change in strategy. Nevertheless, there was a second shift in military strategy in the early 2000s, and the shift to the Dolphin was assessed to be even more drastic than the first. Three key reasons account for the shift from the Porcupine to the Dolphin strategy: change of security environment, change of economic conditions, and change of international norms and expectations.

**(1) Change of Security Environment**

Just like in the first shift, changes in Singapore’s security environment were also instrumental in driving the second shift and shaping the Dolphin strategy. The influence of this key driver in the second shift, however, was less prominent as the period preceding the shift was characterized by overall improving relations, which in turn afforded Singapore more flexibility in its military strategy. In particular, Huxley asserts that Singapore’s relations with its sub-regional neighbors improved considerably following the change in respective key leadership positions around the 2000s, paving the way for improved relations and increased cooperation.<sup>59</sup> Shang-Su Wu supports this

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<sup>57</sup> Huxley, *Defending the Lion City*, 31.

<sup>58</sup> Ibid.

<sup>59</sup> Ibid., 51.

assessment, and also highlights a corresponding shift in the focus and structure of the SAF in tandem with the shift to the Dolphin strategy.<sup>60</sup> Nonetheless, Singapore's leadership was cognizant that sub-regional relations were unpredictable and susceptible to sudden downturns.<sup>61</sup> As such even though sub-regional relations facilitated the shift to a new military strategy, maintaining the SAF's military superiority over neighboring militaries remained a national priority. Such considerations ensured that the Dolphin retained a strong deterrent capability despite these positive aspects of the change in security environment.

Though sub-regional relations improved, other types of threats emerged in the late 1990s that also contributed to the shift to the Dolphin strategy. Da Cunha asserts that, due to regional economic growth and a rise in global trade, the maritime domain grew in importance and in turn drove the growth of regional navies in Southeast Asia. Such developments enabled regional stakeholders to assert their maritime influence, potentially infringing on Singapore's sovereignty. Singapore's leadership was adamant for the island-state to remain militarily superior so as to prevent such thoughts from developing.<sup>62</sup> In addition, there was a conscious effort among regional states to maintain the good relations that had contributed to the consistent economic growth in Southeast Asia. In this aspect, regional militaries were increasingly being used to promote confidence and cooperation among Singapore's neighbors as well.<sup>63</sup> The Porcupine strategy, however, was unable to effectively meet these new objectives and thus needed to be replaced.

Singapore's security landscape, however, was not limited to conventional threats alone. Analysts agree that during the 1990s, there was a "shift in the [regional and international] security landscape, which widened to include non-conventional threats

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<sup>60</sup> Shang-Su Wu, *The Defense Capabilities of Small States: Singapore and Taiwan's Responses to Strategic Desperation* (Singapore: Springer 2016), 51.

<sup>61</sup> Huxley, *Defending the Lion City*, 46.

<sup>62</sup> Da Cunha, "Major Asian Powers and the Development of the Singaporean and Malaysian Armed Forces," 59.

<sup>63</sup> Koh, "Seeking Balance," 88–89.

such as terrorism and piracy.”<sup>64</sup> Wu asserts that Singapore’s position as an international financial and travel hub, “stable international status,”<sup>65</sup> and strong relations with the United States made it an attractive target for terrorist attacks. In addition, Singapore’s Muslim neighbors were now not only potential military threats but became sources of emerging non-conventional threats as well. Andrew Tan also highlights the rise of piracy in Southeast Asia, which coincided with the rise of global maritime terrorism, leading to “heightened fears of a terrorism-piracy nexus that could lead to a devastating maritime terrorist attack.”<sup>66</sup> These factors thus contributed to a more complex strategic security environment for Singapore,<sup>67</sup> which the Porcupine was unable to address; more significantly, these new threats targeted Singapore’s strategic infrastructures and economic stability, raising the stakes for the young nation and thus driving the need for a new military strategy.

## (2) Change of Economic Conditions

Scholars agree that economic growth started to play an increasingly crucial role in funding and shaping the change to the Dolphin strategy. Consistent economic growth made any forms of conflict increasingly unpalatable, and thus the aggressively deterrent Porcupine strategy began to lose its appeal among Singapore’s policy makers. Huxley adds that consistent economic growth was not only crucial in financing military development, but it also enabled Singapore “to reduce the city-state’s vulnerabilities,”<sup>68</sup> notably by taking steps to decrease its dependency on Malaysia for water and food by financing the purchase of “alternative supplies”<sup>69</sup> from Indonesia and Thailand. In addition, economic growth financed research, the development of technology, and

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<sup>64</sup> “History of the MINDEF/SAF,” MINDEF, accessed June 13, 2016, [http://www.mindef.gov.sg/imindef/about\\_us/history/overview.html#tab-4](http://www.mindef.gov.sg/imindef/about_us/history/overview.html#tab-4).

<sup>65</sup> Wu, *The Defense Capabilities of Small States*, 176.

<sup>66</sup> Ibid.

<sup>67</sup> Ron Matthews and Nellie Zhang Yan, “Small Country ‘Total Defense’: A Case Study of Singapore,” *Defense Studies* 7, no. 3 (2007): 383.

<sup>68</sup> Huxley, *Defending the Lion City*, 71.

<sup>69</sup> Ibid.

“construction of desalination and water recycling plants,”<sup>70</sup> enabling Singapore to gradually improve its self-sufficiency for water. Wu argues that “[t]he diminution or elimination of the dependency on Malaysia for water could lower or defuse any motive for an offensive strategy to secure a water source.”<sup>71</sup> These economically induced changes strengthened Singapore’s security position and facilitated increased flexibility in the evolution of military strategy, contributing to the shift to the Dolphin.

Economic growth also influenced changes in economic conditions for Singapore in various other ways. From the 1990s, regional economic growth contributed to evolving operating conditions, which posed serious challenges to the Porcupine strategy. In particular, the effects of “rapid urbanization”<sup>72</sup> in the Malaysian state of Johor, from which Singapore purchased the majority of its water supply, combined with the modernization of the Malaysian Armed Forces (MAF) complicated the SAF’s ability to swiftly and decisively capture military objectives in a direct manner, a plan central to the Porcupine strategy. Another unintended outcome of the changing economic conditions was the creation of manpower constraints, which exacerbated the “SAF’s need to exploit modern military technology.”<sup>73</sup> To overcome the challenges of the new operating conditions, maintain an overwhelming superiority over potential adversaries in the region, and resolve manpower constraints in the SAF, Singapore adopted the Revolution in Military Affairs (RMA) approach for the SAF. Yet, the SAF’s technological advancement and capability upgrades would “require radically different *modus operandi* for their effects to be maximized,”<sup>74</sup> thus driving the shift in military strategy to the Dolphin.

### (3) Change of International Norms and Expectations

As a driving force for the shift to the Dolphin strategy, the change in international norms and expectations was not as influential as the two preceding factors discussed.

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<sup>70</sup> Lee, “The Water Issue between Singapore and Malaysia,” 4.

<sup>71</sup> Wu, *The Defense Capabilities of Small States*, 53.

<sup>72</sup> *Ibid.*, 66.

<sup>73</sup> Huxley, *Defending the Lion City*, 93.

<sup>74</sup> Loo, “The Management of Military Change,” 74.

Analysts agree that its impact, however, was still significant. Benson Chian argues that by the 1990s, there was an “increasing social and international expectation of military involvement in delivering humanitarian assistance,”<sup>75</sup> and Singapore’s leaders were keen to assure international partners that Singapore “contribute[s] not in words but in deeds.”<sup>76</sup> See Seng Tan asserts that there was a growing view among Singapore’s leadership that “SAF’s usefulness is not defined solely in terms of deterrence against external attack but equally that of creating international space for Singapore and ensuring for itself freedom of manoeuvre.”<sup>77</sup> In addition, Singapore’s leadership understood that in order for the island-state to continue thriving and also to benefit from international cooperation and protection, Singapore needed to contribute as a “responsible stakeholder and not [behave] as a free rider.”<sup>78</sup> The Porcupine strategy was not designed to support Singapore’s desired role as a “responsible member of the international community,”<sup>79</sup> thus facilitating the shift to the Dolphin strategy.

#### **D. KEY ASSESSMENTS AND CRITIQUES**

In reviewing the literature, two observations stand out. First, two factors—namely, “changing security environment” and “economic growth”—were consistent in driving both changes, with the latter playing an increasing role in the shift to the Dolphin. In the second shift, “changing international norms and expectations” also contributed to the change, but it was notably not a factor for the shift from Poisonous Shrimp to Dolphin. The first change in strategy was arguably less drastic than the second; it exhibited the characteristics of an escalation in aggression capabilities to enhance deterrence to similar threats, albeit in a deteriorated security environment. In fact, Pak

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<sup>75</sup> Chian, “Should the SAF Maintain Its Existing Focus on Full-Spectrum Dominance?” 33.

<sup>76</sup> Ibid., 36.

<sup>77</sup> Tan, “Mailed Fists and Velvet Gloves,” 338.

<sup>78</sup> “Special Feature: S.T Lee Project on Global Governance. In Conversation,” LKY School of Public Policy, accessed June 15, 2016, [http://lkyspp.nus.edu.sg/wp-content/uploads/2013/04/TK\\_CAG\\_Feb-2009.pdf](http://lkyspp.nus.edu.sg/wp-content/uploads/2013/04/TK_CAG_Feb-2009.pdf).

<sup>79</sup> “MFA Press Release: Remarks by Minister for Foreign Affairs K Shanmugam, 2nd Minister for Foreign Affairs Grace Fu, SMS for Foreign Affairs Masagos Zulkifli and SPS for Foreign Affairs Sam Tan in Parliament during the Committee of Supply Debate,” Ministry of Foreign Affairs, Singapore, March 5, 2014, [https://www.mfa.gov.sg/content/mfa/media\\_centre/press\\_room/pr/2014/201403/press\\_20140305.html](https://www.mfa.gov.sg/content/mfa/media_centre/press_room/pr/2014/201403/press_20140305.html).

Shun Ng critically analyzes the first shift in Singapore's military strategy and raises doubts about whether, besides the new name, substantive change in strategy actually occurred. To Ng, the change to Porcupine, which was marked by an official government announcement, was merely rhetorical. He asserts that it "took place because the SAF, backed with the timely maturity of Singapore's military capability and its indigenous military planning capacity, could credibly convince both Singaporeans and foreigners of Singapore's true defense posture to improve its stature through a public announcement."<sup>80</sup> By contrast, this author and the majority of scholars contend that the official announcement marked a substantive and necessary shift in military strategy, as is discussed in Chapter II.

Second, all analysts acknowledged the importance of economic growth in the evolution process; however, most underplayed the influence that economic considerations had in the evolution of Singapore's military strategy. Most scholars focused their arguments on how economic growth supported capability development, rather than how it triggered change itself. This literature review, however, has revealed that besides financing the change, economic factors have featured prominently as one of the key drivers for change in Singapore's military strategy, especially from the Porcupine to the Dolphin.

## **E. POTENTIAL EXPLANATIONS AND HYPOTHESES**

The literature review revealed various reasons that scholars have attributed to the evolution of military strategy in Singapore; however, on their own, they do not paint the full picture. Deeper analyses revealed two underlying driving forces, under which the individual reasons identified can be grouped. They lead to the following two hypotheses.

Hypothesis One: Changing security environment was the underlying driving force for the evolution of Singapore's military strategy. This hypothesis asserts that the Porcupine and Dolphin strategy were responses to changes in security environment; from the literature reviewed, this is also the predominant view amongst scholars in this field.

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<sup>80</sup> Ng, *From Poisonous Shrimp to Porcupine*, 11.



Hypothesis Two: Economic growth was the underlying driving force for the evolution of Singapore's military strategy. This hypothesis asserts that economic growth drove both shifts through indirect and direct means, and particularly as a direct cause of change in the second shift as Singapore became more integrated into the global economy. Singapore's rapid economic development funded military capability development, created the conditions for societal challenges, and shaped national interests, affecting Singapore's security environment and how its leaders perceived existing threats could be managed.

## **F. RESEARCH DESIGN**

This thesis takes a historical analysis approach, studying each shift as a unique case study. The key characteristics of the Porcupine and Dolphin are assumed to reflect the prevailing conditions prior to each respective change. Studying each change as a separate case study facilitates the assessment of whether the changes are unique to each stage or are continuations across the time period. This paper primarily consults scholarly secondary sources for their informed analysis, and also for the purpose of consolidation and review of existing explanations of change. Military publications and journals articles contributed by military scholars, such as *POINTER*, are also utilized for additional insights. For official data and officially announced government positions to back up any claims made in this paper, official government websites are used.

## **G. THESIS OVERVIEW**

The aim of the thesis is to identify the most compelling reason(s) for the two shifts in Singapore's military strategy. Chapter II analyzes the first shift, from Poisonous Shrimp to Porcupine. It explores the dynamics by which change of security environment and change of economic conditions interplayed to drive the first shift. Chapter III addresses how the effects of the changes in security environment, economic conditions, and to a lesser extent, international norms and expectations combined to make the second shift, from Porcupine to Dolphin, compelling. Finally, Chapter IV concludes by summarizing the findings, showing how the evidence supports the thesis' conclusion. It also compares both shifts and highlights observed trends and their implications, and it ends by offering an analysis of a potential third shift.

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## **II. THE FIRST SHIFT: FROM POISONOUS SHRIMP TO PORCUPINE**

Chapter II analyzes the first of two shifts in Singapore's military strategy, from the Poisonous Shrimp to the Porcupine. This chapter's objective is to test the two hypotheses highlighted in Chapter I; it also evaluates the relative impact of the two key factors—change of security environment and change of economic conditions. This chapter highlights how they contributed to making the shift necessary. Though both key factors combined to achieve the eventual outcome, changes in security environment played the more influential role in driving the first shift in Singapore's military strategy, primarily because the country's economic potential was not sufficiently realized to have a more direct impact. To support this argument, this chapter has been organized into four sections. Section A provides the background on how and why the Poisonous Shrimp strategy came to exist the way it did, setting the context for analysis and comparison in the subsequent sections. Section B discusses the declaration of the first shift and makes the case that it is indeed substantial and necessary. Section C then details the changes to Singapore's security environment and economic conditions that made the shift to the Porcupine strategy inevitable, arguing in the process that changes to security environment played the greater role. Finally, Section D provides a chapter summary.

### **A. BACKGROUND**

The conditions and strategic concerns that the Singaporean leadership faced in the years leading to and immediately after independence in 1965 were key in shaping the characteristics of the Poisonous Shrimp strategy. Understanding these conditions and concerns enables a better appreciation of why Singapore's People's Action Party (PAP) leadership believed the subsequent shift to the Porcupine strategy was required.

The British played a key role in developing pre-independence Singapore, providing the necessary protection, stability, and infrastructure to support the island-state's important entrepôt role for the empire; Singapore's own economic development under the British, however, was limited. According to Jon Quah, "When Singapore

attained self-government [in 1959] after nearly 140 years of British colonial rule, it had a population of 1.58 million that was growing at the rate of 4 percent annually, an economy based on entrepôt trade, and an unemployment rate of 5 percent.”<sup>81</sup> In 1960, Singapore’s per capita Gross National Product (GNP) “was only S\$1,330 or US\$443,”<sup>82</sup> and shared the “classic features of a developing country.”<sup>83</sup> After independence, the young nation continued to face economic uncertainty. Not only were Singapore’s markets still integrated and dependent on Malaysia’s, they now faced stiff competition from Malaysia and other emerging regional economies as well. The complete withdrawal of British troops by the early 1970s also led to the “loss of 40,000 jobs and a fifth of Singapore’s national income.”<sup>84</sup> In addition, with a population of an “immigrant and multi-racial nature,”<sup>85</sup> Singapore’s leadership placed great emphasis on nation building, an objective made more challenging by the threats of communism and communalism; the PAP leadership was convinced that economic conditions had to be drastically and expeditiously improved to counter the appeal of these two threats, and to “enhance the citizens’ commitment to Singapore.”<sup>86</sup> As such, from the onset of independence, great emphasis and resources were poured into growing Singapore’s economy.

The difficulties of nation building and economic growth, however, were not the only challenges the young nation faced in its formative years. Besides having to quash the domestic violence incited by communism and communalism, Singapore’s leadership was also burdened with the obsession of overcoming inherent vulnerabilities and defending the young island-state against external attacks. Furthermore, Huxley asserts that it was never the intention of the PAP to “take responsibility for the city-state’s

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<sup>81</sup> Jon S.T. Quah, “Singapore’s Model of Development: Is It Transferable?” in *Behind East Asian Growth: The Political and Social Foundations of Prosperity*, ed. Henry S. Rowen (New York: Routledge, 2015), 105.

<sup>82</sup> Ibid.

<sup>83</sup> Ibid.

<sup>84</sup> Ron Matthews and Nellie Zhang Yan, “Small Country ‘Total Defense’: A Case Study of Singapore.” *Defense Studies* 7, no. 3 (2007): 377.

<sup>85</sup> Quah, “Singapore’s Model of Development: Is It Transferable?,” 106.

<sup>86</sup> Ibid.

defense,”<sup>87</sup> preferring for the role to be undertaken “by the Malaysian federal armed forces ... and by a continuing major British military presence.”<sup>88</sup> The unexpected expulsion from Malaysia in 1965, however, and the sudden announcement of British withdrawal in 1967 drastically derailed the initial plans of the PAP leadership.<sup>89</sup> According to See Seng Tan, Singapore then had “only two infantry battalions, two ships, no air force and no martial tradition to boot.”<sup>90</sup> The security vacuum created by the departure of the British, combined with bilateral and regional tensions in the 1960s and 1970s amplified Singapore’s sense of vulnerability to external threats, in particular, from its larger neighbors Malaysia and Indonesia.<sup>91</sup> In addition, “Singapore had just emerged from Confrontation with Indonesia, which lasted from 1963 to 1966,”<sup>92</sup> and the memories were still fresh in the minds of the nation’s leadership and population alike. Such fears contributed significantly in creating a “siege mentality”<sup>93</sup> that was key in shaping the Poisonous Shrimp strategy, and this mentality would remain influential even up to the 1990s.

Singapore, at independence, was in dire straits and desperate for a quick but effective solution to its security problems. It was thus against this grim backdrop of hostile neighbors, resource constraints, and the urgency to set up a credible and deterrent SAF from scratch that the Poisonous Shrimp strategy was developed. It was designed with the modest ambition “to provide for Singapore’s basic defense”<sup>94</sup> and deter direct aggression by its hostile neighbors (Malaysia, and to a lesser extent Indonesia). Singapore’s ambitions to provide for its own security, however, did not stay modest for long.

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<sup>87</sup> Huxley, *Defending the Lion City*, 22.

<sup>88</sup> Ibid.

<sup>89</sup> Ibid., 18.

<sup>90</sup> Tan, “Mailed Fists and Velvet Gloves,” 335.

<sup>91</sup> Huxley, *Defending the Lion City*, 12; Loo, “Maturing the Singapore Armed Forces: From Poisonous Shrimp to Dolphin,” 179.

<sup>92</sup> Tan, “Singapore’s Defense: Capabilities, Trends, and Implications,” 453.

<sup>93</sup> Tan, “Mailed Fists and Velvet Gloves,” 334.

<sup>94</sup> “History of the MINDEF/SAF,” MINDEF, accessed June 13, 2016, [http://www.mindef.gov.sg/imindef/about\\_us/history/overview.html#tab-4](http://www.mindef.gov.sg/imindef/about_us/history/overview.html#tab-4).

## **B. DECLARING THE FIRST SHIFT**

By the late 1970s, both Singapore's economy and military grew in strength, but the nation still could not overcome its sense of insecurity. Up to that point, the Poisonous Shrimp strategy had served its purpose in deterring invasion; however, its limitations as a strategy were quickly becoming more apparent as Singapore progressed. This was an issue that the nation's leadership was eager to address. In 1982, Singapore's current Prime Minister Lee Hsien Loong, in the capacity then as the SAF's Chief of Staff (General Staff), "[d]eclared [in a public speech,] the need for Singapore to shed the [defeatist] 'Poisonous Shrimp' image and build its military to survive any attack."<sup>95</sup> Such a declaration was widely viewed by analysts to signal the shift to the Porcupine strategy, which was designed to enhance survivability and better address the island-state's evolving security concerns; scholars, however, were not unanimous in their views about the shift. Although the majority of scholars agree that this declaration marked a substantive and necessary shift in military strategy, analysts like Pak Shun Ng, assert that the shift remained rhetorical.

This thesis compared the Poisonous Shrimp and the Porcupine and found that the key characteristics of both strategies reflect the different circumstances that influenced their respective designs; what the Poisonous Shrimp strategy could not solve became new requirements that influenced the design of the Porcupine, namely: the need to take pre-emptive action, the need to create strategic depth, and the need for stronger deterrence. Specifically, the Porcupine strategy was designed to achieve more credible deterrence through power projection and preemptive strikes, and this in turn influenced the SAF's focus on superior air force and armor capabilities rather than on further strengthening of the army.

The following paragraphs provide evidence that the Porcupine strategy was shaped by specific requirements that the Poisonous Shrimp could not cater to, thus serving two purposes. First they support the argument that the shift from the Poisonous Shrimp to the Porcupine was both substantive and necessary. Second, because the nature

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<sup>95</sup> Ng, *From Poisonous Shrimp to Porcupine*, 1.

of the evidence presented in the following sub-sections is directly related to the changing security environment, it supports this chapter's argument that changes in security environment was the more significant of the two key factors driving the first shift.

**a.      *Need to Take Pre-emptive Action***

Singapore depended heavily on Malaysia for a majority of its water supply, and because of the prickly bilateral relations with Malaysia, the island-state developed paranoia over having “its water supply cut off.”<sup>96</sup> Singapore's leadership was determined to secure water resources at all costs, and that meant by force if necessary. To achieve this objective, pre-emptive action would be required, but the defense-oriented Poisonous Shrimp strategy was not designed for pre-emption. Shang-Su Wu supports this assessment, asserting that, “After the British withdrawal, while the SAF had military superiority in armor and air power”<sup>97</sup> over the Malaysian Armed Forces (MAF), the Poisonous Shrimp strategy made it difficult for Singapore to overcome Malaysian defense of the water sources in Johor—especially if Malaysia was given time to prepare.<sup>98</sup> In any case, a strategy based on mere brute force would not have achieved the intended outcome of securing water resources with related infrastructure intact. The SAF then, though superior in comparison to the MAF, did not possess the required capabilities to strategically project forces and defeat the adversary in its own territory. Thus, it was evident that Singapore needed to adopt a more pre-emptive strategy, one that could “achieve a swift and decisive victory over aggressors,”<sup>99</sup> and “give the aggressor a knock-out punch in round one.”<sup>100</sup>

**b.      *Need to Create Strategic Depth***

Singapore is a small island-state surrounded by geographically larger and politically more aggressive neighbors. Thus, it is extremely vulnerable to military

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<sup>96</sup> Wu, *The Defense Capabilities of Small States*, 46.

<sup>97</sup> Ibid.

<sup>98</sup> Ibid.

<sup>99</sup> Loo, “Maturing the Singapore Armed Forces: From Poisonous Shrimp to Dolphin,” 180.

<sup>100</sup> Ibid.

aggression, which can cause physical damage and economic disruptions, as well as spillover effects from regional social or political unrest. Through the Porcupine strategy, Singapore thus sought to create a physical buffer between itself and potential adversaries by projecting its military capabilities far beyond its shores, expanding its sphere of influence and thus creating strategic depth. The rise in sub-regional tensions as well as extra-regional threats to Singapore and its Southeast Asian counterparts in the 1970s reinforced this requirement. Huxley advocates this view, explaining that Singapore's leaders understood that the island-state's "extremely small land area means that the republic has no territorial strategic depth: it cannot yield territory to an aggressor with the expectation of later regaining it."<sup>101</sup> In addition, memories of Singapore's swift defeat by the Japanese advancing from the north during WWII were still fresh in the minds of its nation's leaders. As such, there was a firm belief that "effective protection [of Singapore] from landward attack is only possible by in-depth defense of Johor and the Malayan peninsula ... [because] from Johor, an enemy could cut water and food supplies and shell Singapore into submission."<sup>102</sup> Andrew Tan, Raska, and Loo agree that the focus on "creating strategic depth to protect the island from direct enemy fire, and moving the forward edge of the battle area in order to secure Singapore's water supplies sources from southern parts of Malaysia,"<sup>103</sup> had essentially "driven the evolution"<sup>104</sup> toward the Porcupine becoming "a strategy of Forward Defense."<sup>105</sup>

*c. Need for Stronger Deterrence*

In the years leading up to the early 1980s, bilateral tensions between Singapore and its immediate neighbors, "particularly Malaysia, which tended to use the former as a convenient political scapegoat for domestic problems,"<sup>106</sup> consistently threatened the

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<sup>101</sup> Huxley, *Defending the Lion City*, 32.

<sup>102</sup> Ibid.

<sup>103</sup> Raska, *Military Innovation in Small States*, 142.

<sup>104</sup> Ibid.

<sup>105</sup> Andrew Tan, "Singapore's Defense: Capabilities, Trends, and Implications," 454.

<sup>106</sup> Chian, "Should the SAF Maintain Its Existing Focus on Full-Spectrum Dominance?" 33.



island-state's "economic and social stability."<sup>107</sup> Disagreements with Malaysia often involved the larger state threatening to cut water supplies or changing previously agreed-upon terms. In some cases, Malaysia even brandished threats of war. Such actions reinforced the idea that "the poisonous shrimp strategy was deficient in that it offered Singapore merely a choice of suicide or surrender because of its implication that the SAF would fight an ultimately unwinnable war on its own territory."<sup>108</sup> Although Singapore was never attacked militarily, its Poisonous Shrimp strategy did little to deter the nation-state's larger neighbors from occasional attempts at influencing its domestic and foreign policies.

Malaysia and Indonesia tended to view Singapore as the "younger sibling" in the three-sided relationship. Regardless of the island-state's development leading up to the 1980s, these neighboring countries expected Singapore's actions and policies to reflect that hierarchical position. However, Singapore, led by then ambitious and steel-willed Prime Minister Lee Kuan Yew, refused to submit to political bullying. Resolving disagreements through compromise and peaceful negotiations remained important, but Singapore's leadership firmly believed that fruitful negotiations were impossible if they were not "backed up by real military strength"<sup>109</sup> and the resolve to use it when required. Singapore's leaders believed that "such a provocative and tough military posture would constitute an effective deterrent to potential adversaries."<sup>110</sup> Singapore sought to convey "the message: I may not completely destroy you, but you will have to pay a high price for trying to subdue me, and [even then] you may still not succeed."<sup>111</sup> The Porcupine strategy was thus designed to achieve stronger deterrence, backed by the 2G SAF, which was substantially superior to neighboring armed forces on the land, the air, and the sea.

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<sup>107</sup> Chian, "Should the SAF Maintain Its Existing Focus on Full-Spectrum Dominance?" 33.

<sup>108</sup> Huxley, *Defending the Lion City*, 57.

<sup>109</sup> Andrew Tan, "Singapore's Defense: Capabilities, Trends, and Implications," 453.

<sup>110</sup> *Ibid.*, 454.

<sup>111</sup> *Ibid.*

## C. EXPLAINING THE SHIFT

The leaders who designed the Poisonous Shrimp strategy were influenced by the events that occurred before and immediately after Singapore's independence. At the same time, limited resources and time also meant that the objectives of the Poisonous Shrimp strategy had to be kept modest. By the 1970s, however, it became clear that the Poisonous Shrimp strategy was inadequate in ensuring Singapore's national interests. This can be attributed to two key factors: change of security environment and change of economic conditions.

### 1. Change of Security Environment

In the shift from the Poisonous Shrimp to the Porcupine, two key factors contributed to the change of security environment, namely: deterioration of sub-regional relations and emerging regional and extra-regional threats.

#### a. *Deterioration of Sub-Regional Relations*

Since independence, a key challenge for Singapore's leadership was to manage the relationships with the nation's two closest neighbors, Indonesia and Malaysia. Singapore-Malaysia relations were comparatively more tumultuous and thus had a greater influence on Singapore's military strategy. The separation agreement between Malaysia and Singapore deliberately included provisions to promote "continuing extremely close bilateral defense links but, in practice, such ties did not endure for long after separation."<sup>112</sup> In 1972, the British withdrew their troops from the region and relinquished responsibility of Singapore and Malaysia. Without the British as the neutral arbitrator, water became increasingly "used as political leverage by Malaysia"<sup>113</sup> against Singapore, even though water agreements were meant to be "honored under the 1965 Separation Act between Singapore and Malaysia, and lodged with the United Nations."<sup>114</sup> Huxley asserts that by the mid-1970s, it became apparent that "The

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<sup>112</sup> Huxley, *Defending the Lion City*, 7.

<sup>113</sup> Poh Onn Lee, "The Water Issue between Singapore and Malaysia: No Solution In Sight?" *Economics and Finance*, no. 1 (2003), 5.

<sup>114</sup> *Ibid.*

Federation intended to make life difficult for Singapore.”<sup>115</sup> Recounting the tumultuous relationship with Malaysia in the earlier decades of his premiership, then Prime Minister Lee Kuan Yew claimed in the 1990s: “The Malaysian leaders thought they could station troops in Singapore, squat on us and if necessary close the causeway and cut off our water supply.”<sup>116</sup> In addition, territorial disputes and disagreements over strategic concerns such as Pedra Branca often led to Malaysia brandishing threats of war.<sup>117</sup> Due to the Poisonous Shrimp strategy’s generic focus on basic defense, its approach to deterrence was non-directional and thus had limited effect. As the Singapore-Malaysia relationship deteriorated, it became clear that any changes to Singapore’s military strategy would have to cater more specifically to countering the threat from up north.

Besides the challenge of deterring invasion, Singapore also faced challenges to its sovereignty. As a newly independent nation, Singapore struggled to establish maneuvering space to exercise her sovereignty and freely make political decisions among her larger and more assertive sub-regional neighbors without offending them. In a speech in 2015, Bilahari Kausikan recounted Singapore’s tense relations with Malaysia and Indonesia, saying:

The basic issue in Singapore’s relations with our neighbors is existential: the implicit challenge that by its very existence a Chinese majority Singapore organized on the basis of multiracial meritocracy poses to systems organized on the basis of different and ultimately irreconcilable principles. That we have the temerity to be successful, adds to the offence.<sup>118</sup>

In addition, Tan asserts that “Singapore’s military build-up [post-independence], in particular its choice of Israel as a model, was greeted initially with hostility in Malaysia and, to a lesser extent, Indonesia.”<sup>119</sup> This hostility was sometimes expressed

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<sup>115</sup> Huxley, *Defending the Lion City*, 8.

<sup>116</sup> Ibid.

<sup>117</sup> Li Lin Chang, “Singapore’s Troubled Relations with Malaysia: A Singapore Perspective,” *Southeast Asian Affairs* (2003), 263; Huxley, *Defending the Lion City*, 63.

<sup>118</sup> “Speech by Bilahari Kausikan on the Legacy of LKY.” Channel News Asia. November 3, 2015. <http://www.channelnewsasia.com/news/singapore/bilahari-kausikan-on-the/2235302.html>

<sup>119</sup> Andrew Tan, “Singapore’s Defense: Capabilities, Trends, and Implications,” 454.

through “rhetorical assaults by Malaysian and Indonesian political leaders over such issues as airspace infringement and perceived lack of sensitivity on the part of Singapore’s leaders.”<sup>120</sup> Occasionally, these neighboring political leaders would leverage on the island-state’s vulnerabilities to “influence independent Singapore’s foreign policy,”<sup>121</sup> infringing on its sovereignty. It became clear to Singapore’s leaders that the nation’s existence as a sovereign state was not threatened by invasion alone. If Singapore was to survive and prosper, it needed a new strategy that could not only continue to deter invasion but also could “deter military, political, or economic pressure from regional states.”<sup>122</sup> The Poisonous Shrimp strategy, with its focus on basic defense and deterring invasion alone, was too passive to achieve this new requirement.

***b. Emerging Regional and Extra-Regional Threats***

Singapore’s security environment was also affected by the tensions from the wider Southeast Asian region and beyond. Andrew Tan describes the 1970s as a period of “heightened political instability”<sup>123</sup> in Southeast Asia, characterized by “changed geopolitical realities”<sup>124</sup> especially after the Vietnam War. The failure of a superpower like the United States to prevent the communist victory in South Vietnam exacerbated the sense of uncertainty among regional states. Although internal security threats posed by communism in Singapore during the 1970s were diminished, the threat of external communist influences spreading among the majority-Chinese Singaporean population still existed, and it was still taken very seriously by the nation’s leadership.<sup>125</sup> Besides the spread of the ideology, fears that communist attacks originating from Indochina would be conducted on the rest of Southeast Asia caused concerned regional states to take individual precautionary measures by strengthening their respective armed forces and

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<sup>120</sup> Koh, “Seeking Balance,” 77.

<sup>121</sup> Huxley, *Defending the Lion City*, 8.

<sup>122</sup> *Ibid.*, 249.

<sup>123</sup> Andrew Tan, “Singapore’s Defense: Capabilities, Trends, and Implications,” 458.

<sup>124</sup> *Ibid.*

<sup>125</sup> Huxley, *Defending the Lion City*, 14–15.

revising military strategies.<sup>126</sup> In addition, Singapore's leaders were wary of "certain external powers making unwelcomed moves into Southeast Asia."<sup>127</sup> In particular, Soviet aircraft activity out of Cam Ranh Bay in Vietnam reinforced these fears and exacerbated concerns for regional security, which would have an impact on Singapore as well.<sup>128</sup> Lacking strategic depth, Singapore was thus forced to consider expanding the reach of its military forces and even intervening in defense of Thailand and Malaysia in the event of Soviet endorsed communist attacks deployed from Vietnam.<sup>129</sup> In addition, Singapore's leadership was adamant that Soviet maritime ambition in the region was best "matched by an American naval presence"<sup>130</sup> and thus sought policies that supported U.S. maritime interests in Southeast Asia. The Poisonous Shrimp was primarily a land-based strategy with limited reach, and thus to cater to these new priorities, Singapore sought a new military strategy that enabled it to extend its military influence beyond its shores.

As maritime trade began to grow in importance in the late 1970s, extra-regional navies also sought to expand their influence in Southeast Asia, adding to Singapore's security challenges. Countries like China and other "second-tier extra regional powers"<sup>131</sup> such as India, Australia, and Japan were "suspected of having regional ambitions,"<sup>132</sup> albeit limited ones. More significantly, they possessed the "naval wherewithal to influence regional maritime policy"<sup>133</sup> and thus were viewed with caution. In contrast, the Southeast Asian navies, at that time, did not have the "capability to dictate the course of maritime events in the South China Sea,"<sup>134</sup> and thus grew

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<sup>126</sup> Andrew Tan, "Singapore's Defense: Capabilities, Trends, and Implications," 458.

<sup>127</sup> Da Cunha, "Major Asian Powers and the Development of the Singaporean and Malaysian Armed Forces," 59.

<sup>128</sup> Ibid., 62.

<sup>129</sup> Andrew Tan, "Singapore's Defense: Capabilities, Trends, and Implications," 458.

<sup>130</sup> Da Cunha, "Major Asian Powers and the Development of the Singaporean and Malaysian Armed Forces," 60.

<sup>131</sup> Tim Huxley, "Southeast Asia in 2004: Stable, but Facing Major Security Challenges," *Southeast Asian Affairs* (2005): 17.

<sup>132</sup> Da Cunha, "Major Asian Powers and the Development of the Singaporean and Malaysian Armed Forces," 61.

<sup>133</sup> Ibid.

<sup>134</sup> Ibid.

increasingly concerned. Prime Minister Lee Hsien Loong echoed similar concerns about India and Japan in a speech as Defense Minister in 1989, not because he saw them as immediate threats to Singapore or Southeast Asia, “but because their actions show that they clearly do not consider amicable regional relations the inevitable consequence of a global trend.”<sup>135</sup> Due to the unpredictable nature of Southeast Asian politics, Singapore would “have to be prepared.”<sup>136</sup> As such, in response to Singapore’s changing “maritime geostrategic context,”<sup>137</sup> the focus of Singapore’s security environment gradually expanded beyond the land to include “SLOC security, seaward defense, and international security.”<sup>138</sup> The Poisonous Shrimp strategy, however, was designed with minimal attention on the maritime domain. Thus, the shift to the Porcupine strategy became a necessity.

## **2. Change of Economic Conditions**

Compared to the changing security environment, economic factors played a less significant role in driving the shift from the Poisonous Shrimp to the Porcupine strategy. Nonetheless, the change in economic conditions beginning in the 1970s did contribute to making the shift in military strategy more compelling. While still primarily playing a supporting role, the nation’s rapidly growing economy became increasingly important and thus began to warrant the attention of Singapore’s military planners. The shift to the Porcupine thus reflected the Singaporean leadership’s acknowledgement of the need to secure investor confidence and also of the increasing importance of the maritime domain.

### ***a. Securing Investor Confidence***

Singapore’s rapid economic growth in the 1970s and 1980s was not only vital to the nation’s initial development, it was also key in fueling military spending and

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<sup>135</sup> Da Cunha, “Major Asian Powers and the Development of the Singaporean and Malaysian Armed Forces,” 61.

<sup>136</sup> Ibid.

<sup>137</sup> Koh, “Seeking Balance,” 78.

<sup>138</sup> Ibid.

contributed to the shift to the Porcupine strategy.<sup>139</sup> Besides funding military capability development, Huxley asserts that globalization and rapid economic development made Singapore “vitally dependent on foreign investment.”<sup>140</sup> To ensure Singapore’s economy continued to develop, the nation’s leadership understood the importance of securing investor confidence, and thus, the nation had to make changes to its military strategy to enhance its security and deterrence profile. Any “loss of confidence in the republic’s stability or security would seriously damage its economic health.”<sup>141</sup> The defeatist nature of the Poisonous Shrimp strategy did not instill confidence and had to be replaced. Under this strategy, even if Singapore could be successfully defended from invasion, it would sustain damage that could cripple the nation’s economic infrastructure. To Huxley and Ng, a change to a stronger and more credible military strategy that could take the fight to the enemy and prevent damage to Singapore’s territory demonstrated the national leadership’s commitment for long-term security and stability. Thus, it could discourage “prospective foreign investors from pulling out their investments and transferring them to safer havens and instead make investors confident of Singapore’s economic potential.”<sup>142</sup> In addition, the PAP leadership was adamant that the island-state’s economy would not survive a prolonged war and thus sought a quick solution. A strong air force was therefore seen as the key to a swift and decisive victory. Due to ready technology and willing sellers, it was also convenient and practical for Singapore to build a formidable air force in a short timespan, albeit at a high cost. Singapore’s economic strength made this a viable option and thus contributed to the shift to the Porcupine.

***b. Increasing Maritime Importance***

Though an island-state, Singapore’s focus on the maritime domain did not develop until the 1980s. This was particularly surprising given Singapore’s “complete lack of natural resources and the continuing importance of its entrepôt role,”<sup>143</sup>

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<sup>139</sup> Loo, “Maturing the Singapore Armed Forces: From Poisonous Shrimp to Dolphin,” 180.

<sup>140</sup> Huxley, *Defending the Lion City*, 32.

<sup>141</sup> Ibid.

<sup>142</sup> Ng, *From Poisonous Shrimp to Porcupine*, 16.

<sup>143</sup> Huxley, *Defending the Lion City*, 31.

established during its colonial era, which resulted in the island-state's "extreme dependency on the outside world."<sup>144</sup> Rapid economic growth beginning in the 1970s, however, compelled Singapore to pay more attention to the maritime domain. Heavy reliance on foreign trade and heavy investments in developing world-class port facilities further increased the importance of secure SLOCs and uninterrupted maritime trade to Singapore. The crippling of the island-state's maritime linkages with the world was threatening not just to its economy but to its very existence as a sovereign state.<sup>145</sup> Unfortunately, due to Singapore's geographical location, access to and from the "high seas, on which it depends for 85 percent of its trade,"<sup>146</sup> are through Malaysian and Indonesian waters.<sup>147</sup> There was thus a need for the RSN "not only to patrol Singapore's immediate maritime locale more effectively, but also to project naval power further afield and to think in terms, for example, of protecting merchant vessels in the South China Sea."<sup>148</sup> Without a credible navy and strategy to protect Singapore's maritime interests, the young nation would remain at the mercies of its two larger neighbors. The shift to the Porcupine strategy, which included a new maritime element not present in the Poisonous Shrimp, reflected these new concerns.

#### **D. SUMMARY**

This chapter has argued that changes in Singapore's security environment and economic conditions that took place from post-independence up to the early 1980s made the shift to the Porcupine both substantial and necessary. Of the two factors, changes in security environment—notably the deterioration of sub-regional relations and the emergence of regional and extra-regional threats—played the more significant role. These changes were unanticipated, and thus, they not only revealed the weaknesses of the Poisonous Shrimp strategy, they also derailed Singapore's initial plans and caused a deviation from the original trajectory. The changes were reflected in the key

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<sup>144</sup> Huxley, *Defending the Lion City*, 31.

<sup>145</sup> *Ibid.*, 31–32.

<sup>146</sup> *Ibid.*, 31.

<sup>147</sup> *Ibid.*

<sup>148</sup> *Ibid.*



characteristics of the Porcupine, which in turn drove specific capability upgrades in the 2G SAF.

Changes in economic conditions also contributed in making the shift more compelling, albeit to a lesser extent. More significantly, the role that economic considerations played in driving the shift to the Porcupine strategy provides a clear indication of the integration of Singapore's economic interests with its military strategy for the first time. As Singapore's economy grew, and with more at stake, its leadership understood that the defeatist nature of the Poisonous Shrimp strategy was no longer acceptable to both its populace and foreign investors, paving the way for the Porcupine. In addition, Singapore's strong economic position presented more options than the island-state previously had. As such, even though the Army retained an important role as part of the Porcupine strategy, the RSAF benefited the most as it gave the SAF the capability of "preemptive"<sup>149</sup> strikes and force projection if required. Inevitably, this also meant that under such circumstances, "the RSN was the funding 'stepchild,' which limited its procurements and operations."<sup>150</sup> The importance of the maritime domain and thus the RSN, however, would increase substantially in the shift to the Dolphin strategy.

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<sup>149</sup> Loo, "Maturing the Singapore Armed Forces," 180.

<sup>150</sup> Koh, "Seeking Balance," 79.

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### **III. THE SECOND SHIFT: FROM PORCUPINE TO DOLPHIN**

Chapter III analyzes the relative strengths of the two hypotheses articulated in Chapter I regarding the second shift in Singapore's military strategy, from the Porcupine to the Dolphin. Similar to the first shift discussed in Chapter II, the conditions in the period preceding the shift to the Dolphin contributed to the changes and also shaped the corresponding key characteristics in the new strategy. The shift from the Porcupine to the Dolphin strategy, however, is more drastic than the first. Unlike the first shift, the second was driven by three key factors, instead of two. In addition to the changes in security environment and in economic conditions, we consider the change of international norms and expectations. Although the combination of these three key factors made the shift from the Porcupine to the Dolphin strategy necessary, changes in economic conditions played the most significant role. This was only possible because Singapore's economy had matured significantly by the 1990s as a result of rapid and consistent economic growth. To support this argument, this chapter has been organized into three sections. Section A summarizes the key characteristics of the Dolphin strategy, facilitating analysis and comparison in the subsequent sections. Section B then explains how the three key factors drove the shift to the Dolphin strategy, and in the process, highlights how a change of economic conditions was the most significant factor. Finally, Section C summarizes the key arguments presented in the chapter.

#### **A. THE DOLPHIN STRATEGY—KEY CHARACTERISTICS**

Throughout its evolution, Singapore's military strategy retained a strong focus on deterrence. As evident in the unique characteristics of the respective evolutionary stages, though, each shift sought to achieve deterrence differently. Thus, by examining the key features of the Dolphin strategy and what they were designed to achieve, we can discern the impact of the three key factors in driving the second shift; this facilitates the analysis and comparison done in Section B of this chapter.

Though achieved in different ways, the Poisonous Shrimp and the Porcupine strategies both projected a prickly posture backed by the willingness to use brute force as

the primary means to deter potential attackers. The Dolphin, on the other hand, sought to deter in a way that better reflected Singapore's development, wealth, and newfound international standing. This strategy phase embraces a softer and more diplomatic approach, focusing instead on spearheading regional initiatives that help to build shared awareness, regional confidence, and stronger relations. Singapore's leaders also sought to reinforce this objective by contributing beyond the region and making Singapore relevant to the global community. The Dolphin strategy was thus designed with these considerations in mind. Notwithstanding its international contributions, the Dolphin strategy still retained a strong and potentially aggressive deterrent factor backed by the SAF's technologically superior capabilities and "emphasis on swift and agile attacks upon its foes, much as dolphins are said to strike at sharks"<sup>151</sup> when required. For these reasons, this thesis describes the Dolphin's deterrence style as "preventive deterrence," a term first introduced in Chapter I.

Another distinct feature of the Dolphin strategy is its clear emphasis on protecting economic interests and on dealing with threats to sovereignty, security, and maritime trade. This approach reflects Singapore's "growing dependence on long and vulnerable sea-lines of communications and strategic waterways to markets and energy resources"<sup>152</sup> as its economy grew exponentially after the 1980s. As such, the RSAF remained an important element in the Dolphin strategy and continued to be the main beneficiary of the nation-state's economic growth. The RSN also reaped the benefits of the increasing maritime focus in the Dolphin, which enabled the navy to procure submarines, Landing Ship Tanks, and stealth frigates to replace the aging fleet that had limited range, endurance, and attack capabilities. To Da Cunha, a good "evidence of the [increasing] maritime orientation"<sup>153</sup> of Singapore's military strategy beginning in the late 1990s is the procurement of maritime patrol and surveillance aircraft, the reconfiguration of significant numbers of air force fighter interceptors and strike aircraft

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<sup>151</sup> Gad, "Poison Shrimp, Porcupines, and Dolphins: Singapore Is Packing Some Serious Heat."

<sup>152</sup> Andrew Tan, "The Emergence of Naval Power in the Straits of Malacca," 120.

<sup>153</sup> Da Cunha, "Major Asian Powers and the Development of the Singaporean and Malaysian Armed Forces," 63.

to conduct maritime reconnaissance and anti-shipping operations,<sup>154</sup> and the “acquisition of anti-ship missiles and associated target acquisition systems”<sup>155</sup> to support the changing “roles [of RSAF fighter aircraft] from ground attack to that of sea strike.”<sup>156</sup> Da Cunha also asserts that, “More significant, perhaps, has been the retrofitting of mid-air refueling probes onto these aircraft, giving them a substantial range to hit targets well out into the South China Sea [and the Straits of Malacca],”<sup>157</sup> supporting the navy’s strategic shift from limited sea denial to sea control. These changes to the SAF’s capabilities to achieve full-spectrum dominance were driven in turn by the shift in military strategy, reflecting Singapore’s desire to extend its influence beyond the region, and also an increased maritime focus that came to characterize the Dolphin.

## **B. EXPLAINING THE SHIFT**

As mentioned in the previous section, the Dolphin strategy was similar to its two preceding forms in that it retained a strong emphasis on deterrence. There were also, however, key differences that support the argument that the second shift was more drastic than the first. Three key reasons account for such an outcome: change of security environment, change of economic conditions, and to a lesser extent, change of international norms and expectations.

### **1. Change of Security Environment**

In the shift to the Dolphin, changes in Singapore’s security environment can be attributed to three key factors: improvement of sub-regional relations, growth of regional navies, and emergence of non-conventional threats. These changes caused Singapore’s security focus to expand beyond traditional operating boundaries and threats.

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<sup>154</sup> Da Cunha, “Major Asian Powers and the Development of the Singaporean and Malaysian Armed Forces,” 63.

<sup>155</sup> *Ibid.*, 64

<sup>156</sup> *Ibid.*

<sup>157</sup> *Ibid.*

a. *Improvement of Sub-Regional Relations*

Singapore's relationship with its sub-regional neighbors has always been an important influence on how its leadership viewed the island-state's security environment. Huxley asserts that beginning in the 1980s Malaysia and Indonesia shared a "fraternal coziness"<sup>158</sup> and would occasionally lead them to "gang up" against Singapore. This sub-regional dynamic reinforced the island-state's preoccupation with the twin themes of survival and vulnerability, key concerns that the young nation's leadership believed were best countered through the strong army and lethal air force that characterized the Porcupine strategy. By the 1990s, however, "there had been a fundamental realignment in the triangular relationship between Indonesia, Malaysia, and Singapore."<sup>159</sup> Shang-Su Wu and Huxley highlight that the bilateral relations between Singapore and Malaysia gradually improved after Lee Kuan Yew (1990) and Mahathir Mohamad (2003) stepped down as prime ministers of their respective states. In addition, "after Susilo Bambang Yudhoyono took over the Presidency [in 2004], the cooperation between the two countries [Singapore and Indonesia] continued to strengthen across the arenas of anti-crime, economic, and defense."<sup>160</sup> The changes in key leaderships in the three sub-regional neighbors thus paved the way for improved relations and increased cooperation.

Improved sub-regional relations, bolstered by strong economic growth in the 1990s, created an atmosphere of stability and cooperation among the three Southeast Asian neighbors. This afforded Singapore the capacity and flexibility to consider implementing changes to its military strategy. Wu supports this assessment and also highlights a corresponding shift in the focus and structure of the SAF in tandem with the shift Dolphin strategy. He asserts that Singapore's initial focus was "on land offense performed by the army and air force, [primarily] to preserve its water source [and deter invasion], and this strategic plan is reflected in the structure of the SAF prior to the 2000s."<sup>161</sup> Resulting from the improvement of sub-regional relations and increasing

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<sup>158</sup> Huxley, *Defending the Lion City*, 51.

<sup>159</sup> Ibid.

<sup>160</sup> Wu, *The Defense Capabilities of Small States*, 51.

<sup>161</sup> Ibid.

importance of maritime trade, Singapore's military capability development and strategy, post 2000s, developed in a way that reflected the island-state's "concerns with onshore and maritime defense at the same time as the navy was gradually strengthening."<sup>162</sup> Military capability development, however, has proceeded in a "judicious, moderated, and incremental"<sup>163</sup> manner to prevent triggering a naval arms race.

Despite the general improvement of relations with its immediate neighbors, Singapore's leaders remained guarded against potential acts of aggression as sub-regional relations were unpredictable and susceptible to sudden downturns. For example, in 1991 against the general uptrend in sub-regional relations, Singapore's two larger neighbors conducted the "largest ever Malaysian-Indonesian bilateral military exercise, Malindo Darsasa 3AB"<sup>164</sup> in Johor on Singapore's National Day. The exercise simulated a combined invasion scenario and put the SAF on high alert. Though no conflict ensued, such random acts of aggression served to justify the realist sentiments among the PAP leadership and reinforced its commitment to ensure that active deterrence remained a vital element of Singapore's military strategy despite planned changes.<sup>165</sup> As such, while improved sub-regional relations facilitated the shift to a new military strategy, ensuring the SAF's military superiority over neighboring militaries has remained a national priority. These factors influenced the characteristics of the Dolphin strategy, which has focused on cooperation but retains a strong emphasis on military might for deterrence.

#### ***b. Growth of Regional Navies***

The improvement in sub-regional relations coincided with regional economic growth and the rising importance of the maritime domain, causing Singapore's Southeast Asian neighbors to also begin investing in their respective navies. The growth of regional navies and the strategic importance of secure SLOCs to Singapore meant that the RSN's previous role of limited sea denial in the Porcupine strategy would prove to be inadequate

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<sup>162</sup> Wu, *The Defense Capabilities of Small States*, 51.

<sup>163</sup> Koh, "Seeking Balance," 89.

<sup>164</sup> Huxley, *Defending the Lion City*, 46.

<sup>165</sup> Ibid.

moving forward. According to Da Cunha, the key element of “Singapore’s strategy aims not at defeating threats but at preventing them from emerging,”<sup>166</sup> but still, Singapore’s leaders left nothing to chance. As such, while the global strategic importance of the sea routes surrounding Singapore meant that the successful “interdiction by hostile powers or neighbors, which could mine its approaches or blockade it into submission”<sup>167</sup> was considered relatively remote, since it would infuriate other affected maritime stakeholders, Singapore’s leaders have remained adamant that a vastly superior SAF centered on an RSN capable of force projection and sea control would be instrumental in preventing potential adversaries (primarily Malaysia and to a lesser extent, Indonesia) from even harboring such intentions in the first place.<sup>168</sup>

Even as regional navies have grown, there has been a conscious effort among all regional stakeholders to preserve the peace and stability for continued economic development. As such, Singapore has sought to develop a more effective way to enhance national objectives in a way that displays the SAF’s operational readiness and deterrence in a non-aggressive manner, a task the Porcupine strategy could not achieve. In addition, to further improve relations with its Muslim neighbors, there has been a conscious effort on Singapore’s part to shed its image as the “Israel of Southeast Asia.”<sup>169</sup> Bilahari Kausikan reiterated this position in a speech in 2015 saying: “Mr Lee [Kuan Yew] also once told an Israeli General who had helped start our armed forces that Singapore had learnt two things from Israel: how to be strong, and how not to use our strength; meaning that it is necessary to get along with neighbors and no country can live in perpetual conflict with its neighbors.”<sup>170</sup> Such a mentality supports the shift to the Dolphin strategy, which was designed to not only enable better deterrence and defense against

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<sup>166</sup> Da Cunha, “Major Asian Powers and the Development of the Singaporean and Malaysian Armed Forces,” 59.

<sup>167</sup> Tan, “The Emergence of Naval Power in the Straits of Malacca,” 125.

<sup>168</sup> Raska, *Military Innovation in Small States*, 146.

<sup>169</sup> See Seng Tan, “Mailed Fists and Velvet Gloves,” 336.

<sup>170</sup> “Speech by Bilahari Kausikan on the Legacy of LKY.” Channel News Asia. November 3, 2015. <http://www.channelnewsasia.com/news/singapore/bilahari-kausikan-on-the/2235302.html>



evolving threats but also to promote confidence and cooperation among Singapore's neighbors as well.<sup>171</sup>

*c. Emergence of Non-Conventional Threats*

Up to the 1990s, Singapore's security environment had been largely shaped by conventional threats; however, "post-9/11, there was a shift in the [regional and international] security landscape, which widened to include non-conventional threats such as terrorism and piracy."<sup>172</sup> As such, even though the Porcupine era was characterized by improving sub-regional relations and reduced conventional threats to Singapore, the emergence of non-conventional threats contributed to a new security environment that was later described as "troubled peace."<sup>173</sup> Over time, this condition of troubled peace gradually became accepted by Singapore's leadership as the "new normal in our globalized world."<sup>174</sup> Analysts thus agree that "Singapore's [increasingly] unpredictable strategic environment"<sup>175</sup> necessitated a change in military strategy in anticipation of different and newer types of threats, of which terrorism is considered the most dangerous due to its potential to cripple the economy and cause damage directly on Singapore soil. Wu argues that Singapore's "stable international status"<sup>176</sup> and its position as an international financial and travel hub have made it an attractive target for terrorist attacks. Allowing any terrorist attacks to be successfully conducted on Singapore soil, however, would be detrimental to the country's economy and thus its survival. Such threats placed direct pressures on Singapore's strategic planners to integrate the protection of the country's economic infrastructures and interests with its military strategy. To Wu, the terrorist attacks of September 11, 2001 proved that threats from

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<sup>171</sup> Koh, "Seeking Balance," 88–89.

<sup>172</sup> "History of the MINDEF/SAF," MINDEF, accessed June 13, 2016, [http://www.mindef.gov.sg/imindef/about\\_us/history/overview.html#tab-4](http://www.mindef.gov.sg/imindef/about_us/history/overview.html#tab-4).

<sup>173</sup> "Speech by Minister for Defense Dr. Ng Eng Hen at the Committee of Supply Debate 2016." MINDEF, April 8, 2016, [http://www.mindef.gov.sg/imindef/press\\_room/official\\_releases/sp/2016/07apr16\\_speech1.html#.V1WSm5MrKjQ](http://www.mindef.gov.sg/imindef/press_room/official_releases/sp/2016/07apr16_speech1.html#.V1WSm5MrKjQ).

<sup>174</sup> Ibid.

<sup>175</sup> Ron Matthews and Nellie Zhang Yan, "Small Country 'Total Defense': A Case Study of Singapore." *Defense Studies* 7, no. 3 (2007): 383.

<sup>176</sup> Wu, *The Defense Capabilities of Small States*, 176.

terrorism could “be as destructive as conventional military threats,”<sup>177</sup> and that Singapore was becoming increasingly susceptible as a potential target “due to it being surrounded by Islamic countries as well as the close relations it held with the USA; for example, its support for the war on terror.”<sup>178</sup> In addition, Singapore’s Muslim neighbors were now a source of not only potential conventional threats but non-conventional threats as well. As such, these new challenges drastically complicated and altered the strategic security environment for Singapore. The Porcupine strategy did not cater for such security dynamics and thus needed to be replaced.

As a maritime nation, home to the world’s second busiest port,<sup>179</sup> and strategically located along the seaward approaches to and from the South China Sea and the Straits of Malacca, Singapore has always been dependent on seaborne trade. By the early 1990s, however, this dependency on the maritime domain grew exponentially. The peace and stability of the post-Cold War era coincided with the “growth of the global-interlinked economy,”<sup>180</sup> leading to a significant increase in the volume of global seaborne trade. Thus, there has been an increased dependency of Singapore and the other “export-dependent economies in the [Southeast Asian] region”<sup>181</sup> on secure SLOCs and uninterrupted maritime commerce. The growth of the global maritime trade, however, has not been without challenges for Southeast Asia. Andrew Tan asserts that, “piracy in the Straits of Malacca and in Indonesian waters reached crisis levels in 1990s as the region recorded the world’s highest incidences of piracy at that time.”<sup>182</sup> To add to the problems, the sudden slew of terrorist attacks in the early 2000s caused “heightened fears of a terrorism-piracy nexus that could lead to a devastating maritime terrorist attack.”<sup>183</sup> Successful maritime-related terrorist acts such as the attack on USS *Cole* in Yemen and

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<sup>177</sup> Wu, *The Defense Capabilities of Small States*, 49.

<sup>178</sup> Ibid.

<sup>179</sup> “Singapore Still World’s Second Busiest Box Port,” Port Calls Asia, January 7, 2014. <http://www.portcalls.com/singapore-still-worlds-second-busiest-box-port/#>.

<sup>180</sup> Andrew Tan, “The Emergence of Naval Power in the Straits of Malacca,” 120.

<sup>181</sup> Ibid.

<sup>182</sup> Ibid.

<sup>183</sup> Ibid.

the Sipadan hostage crisis in 2000; the bombing of the French tanker, *Lindberg*, off the coast of Yemen in 2002; and the bombing of the *SuperFerry* in the Philippines in 2004 intensified fears that terrorist groups would leverage on the maritime expertise of regional pirates to conduct seaborne attacks in Southeast Asia.<sup>184</sup> The Porcupine strategy was inadequate in managing these emerging non-conventional maritime threats, which put Singapore's economic interests at risk as well, exacerbating the island-state's security concerns moving forward, and adding pressure for a new strategy that could address these new threats.

The Porcupine was designed to deal with specific conventional threats that were primarily land based in nature, and thus it quickly became obvious to Singapore's leaders that the strategy was unsuitable to deal effectively with the complexity and increasingly maritime nature of the threats that were emerging. As much as maritime trade was important to Singapore, the nation's leaders understood that it was vital to the global economy as well. As such, the failure to ensure the security of the sea routes in Southeast Asia, especially the Straits of Malacca, could potentially result in regional and global economic disruptions and therefore "strengthen the temptation of external actors to intervene,"<sup>185</sup> impeding on Singapore's sovereignty. The need for a new strategy was "emphasized by the fact that Japan, [in early 2000,] proposed to dispatch its own vessels together with units from the People's Republic of China and South Korea to support"<sup>186</sup> security patrols in the Straits of Malacca. Adamant that the Southeast Asian region should not be dependent on extra-regional powers for its own security, Singapore's leadership took active steps to lead initiatives for regional security cooperation and information sharing, thus facilitating the transition to the Dolphin strategy.

Unlike conventional adversaries that possess known territories and capabilities, terrorists and pirates are difficult to deter, detect, and eradicate effectively; the Porcupine strategy certainly could not. To deal with the new security environment at home and

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<sup>184</sup> Andrew Tan, "The Emergence of Naval Power in the Straits of Malacca," 120.

<sup>185</sup> Loo, "The Management of Military Change," 72.

<sup>186</sup> Ralph Rotte, "6.5 Maritime Strategy of Singapore," in *Maritime Strategies in Asia*, ed. Jürgen Schwarz, Wilfried A. Herrmann, and Hanns-Frank Seller (Bangkok, Thailand: White Lotus Press, 2002): 394.

abroad, a new military strategy was required, one that was more capable in dealing with the increasing maritime nature of Singapore's emerging threats. Furthermore, the new strategy must be centered on an SAF that was equipped with network-centric capabilities that would enable it to tap the expertise and resources of other national agencies in a "Whole-of-Government approach."<sup>187</sup> This became an important feature of the Dolphin strategy. Singapore's leadership was also cognizant that the threats posed by terrorism and piracy could not be curtailed by Singapore alone; therefore, while self-reliant deterrence remained important to Singapore's strategic planners, there was a deliberate effort to ensure that the Dolphin strategy was designed to encourage cooperation, confidence, and information sharing among regional and international partners. This was important as, prior to the 2000s, official arrangements for coordinated patrols and information sharing between Malaysia, Indonesia, and Singapore were almost non-existent.

## **2. Change of Economic Conditions**

By the early 2000s, Singapore's economy had become integral to the nation's continued existence as a sovereign state. With more at stake, Singapore's economic interests, both domestically and internationally, thus warranted greater protection and attention from its national leaders and strategic planners alike. As such, compared to the shift to the Porcupine strategy where economic factors served mainly as an enabling force, the change of economic conditions played a significantly larger and more direct role in driving the shift to the Dolphin strategy. Five key factors account for this change: consistent economic growth, reduced dependencies, evolved operating conditions, increasing manpower constraints, and technological and structural challenges.

### ***a. Consistent Economic Growth***

As Singapore developed and became wealthier as an outcome of consistent economic growth, the idea of military conflict, regardless of its magnitude or length, became increasingly unpalatable to the nation's leaders and citizens alike due to the

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<sup>187</sup> Chian, "Should the SAF Maintain Its Existing Focus on Full-Spectrum Dominance?" 34.

expected damage to its economy. In addition, the interdependency that Singapore shared with its neighbors “given the largely complementary nature of their economies”<sup>188</sup> would make it even more difficult to recover from the aftermath of any wars in the sub-region. Andrew Tan adds that Singapore’s leaders understood that “any pre-emptive attack by Singapore could mean all-out war with its neighbors, as well as crippling international sanctions should Singapore even attempt to occupy any neighboring territory.”<sup>189</sup> Thus, as Singapore continued to benefit from regional peace and prosperity, the aggressively deterrent Porcupine strategy gradually lost its appeal, and the nation’s leaders had to seek a different approach, reinforcing the assessment that economic considerations were becoming increasingly influential in shaping Singapore’s military strategy.

Besides contributing directly as a factor in driving the shift, Singapore’s consistent economic performance was also instrumental in financing the development and upgrade of the SAF’s capabilities that were central to the Dolphin strategy. Supporting this assessment, Wu asserts that a “series of incidents, such as the regional financial crisis in 1997, the September 11 terrorist attack in 2001, and the Severe Acute Respiratory Syndrome (SARS) outbreak in 2003”<sup>190</sup> threatened to derail the SAF’s force modernization efforts to actualize the Dolphin strategy. Singapore’s consistent economic growth, however, ensured that the plans stayed on track. The RSN, in particular, benefited considerably from this consistent growth; despite the economic downturn and the high costs of naval programs, Singapore was still able to push through its naval buildup unhindered, enabling the RSN to feature prominently as part of the Dolphin strategy in the 2000s.

***b. Reduced Dependencies***

As Singapore lacked natural resources and land for farming, it had been dependent on Malaysia for the majority of commodities required for survival since the colonial era. Benefiting from its strong economy beginning in the 1980s, Singapore was

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<sup>188</sup> Tan, “Singapore’s Defense: Capabilities, Trends, and Implications,” 455–456.

<sup>189</sup> Ibid.

<sup>190</sup> Wu, *The Defense Capabilities of Small States*, 52.

able to take deliberate steps to reduce its vulnerabilities, notably by minimizing the city-state's dependency on Malaysia for water and food. Singapore began purchasing "alternative supplies"<sup>191</sup> from Indonesia and Thailand as well. In addition, economic growth financed research, the development of technology, and "construction of desalination and water recycling plants."<sup>192</sup> By the late 1990s, Singapore's investments in renewable water technologies had paid off. Wu argues that, "The diminution or elimination of the dependency on Malaysia for water could lower or defuse any motive for an offensive strategy to secure a water source."<sup>193</sup> Indeed, Singapore's reduced dependency on Malaysia for water thus meant that the SAF no longer needed to prioritize force projection into Malaysia to secure water sources in the event of war. This development strengthened Singapore's security position and also facilitated increased flexibility in the use of its defense budget and in the evolution of its military strategy. The focus now shifted away from the land battle to reflect the growing importance of the maritime domain in the Dolphin strategy.

*c. Evolved Operating Conditions*

Singapore was not the only country in the region to benefit from improving economic conditions. From the late 1980s onwards, the economic growth experienced in Southeast Asia not only contributed to Singapore's improved relations with its immediate neighbors, Malaysia and Indonesia, it also funded regional development in infrastructure and military capabilities, posing new challenges to the Porcupine strategy in the process. From the 1990s, boosted by a strong economy, many Singaporeans began to invest in property and businesses in the Malaysian state of Johor, from which Singapore purchased the majority of its water supply, fueling "rapid urbanization."<sup>194</sup> Such developments resulted in a higher concentration of civilians and other infrastructure in the southern states of Malaysia, including Singaporeans living there and their properties. Therefore,

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<sup>191</sup> Huxley, *Defending the Lion City*, 71.

<sup>192</sup> Lee, "The Water Issue between Singapore and Malaysia," 4.

<sup>193</sup> Wu, *The Defense Capabilities of Small States*, 53.

<sup>194</sup> *Ibid.*, 66.

the conduct of preemptive strikes on these territories in the event of hostilities,<sup>195</sup> a plan central to the Porcupine strategy, could no longer be easily executed without severe repercussions. In addition, economic growth enabled Malaysia to modernize the MAF substantially, although the SAF remained a superior force.<sup>196</sup> Huxley asserts that, “between the late 1980s and mid-1990s, it appeared that the MAF’s developing conventional capabilities might considerably undermine Singapore’s existing military superiority,” and this concerned the PAP leadership. With a larger defense budget, Malaysia was able to upgrade its air force with advanced strike aircraft and “a more credible national air defense system, threatening to reduce the likely effectiveness of preemptive air strikes by Singapore”<sup>197</sup> in the event of war, and thus supporting the push for a change in military strategy.

The combined effects of “rapid urbanization”<sup>198</sup> in Johor, and the modernization of the MAF thus complicated the SAF’s ability to swiftly and decisively capture military objectives in the direct manner intended as part of the Porcupine strategy. In addition, economic growth also enabled the Royal Malaysian Navy to upgrade its aging fleet and procure submarine capabilities in response to similar developments in the RSN, challenging the Porcupine strategy’s ability to achieve limited sea denial. Wu argues that these factors changed the operating conditions that the SAF would face in the event of war. Thus, it drove the need for a new military strategy that not only gave the SAF the capability to conduct sea control operations, but also the added flexibility to conduct joint-level operations at extended ranges so as to dilute Malaysia’s military resources and complicate its defense plans.

#### ***d. Increasing Manpower Constraints***

Another unintended outcome of the changing economic conditions was the creation of manpower constraints, which inevitably contributed to the shift from the

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<sup>195</sup> Loo, “The Management of Military Change,” 74.

<sup>196</sup> Ibid.

<sup>197</sup> Huxley, *Defending the Lion City*, 67.

<sup>198</sup> Wu, *The Defense Capabilities of Small States*, 66.

Porcupine to the Dolphin strategy. Boosted by rapid economic growth, and in line with changes in military strategy, the SAF's capabilities and force size had grown "almost exponentially"<sup>199</sup> since the 1960s, most notably during the Porcupine era when the RSAF and RSN, in particular, expanded to fulfill their roles for air superiority and protection of the SLOCs, respectively. Unfortunately, the effect of Singapore's "declining birth rate"<sup>200</sup>—ironically also resulting from economically driven policies prior to the 1980s—coincided with the Porcupine phase, when "the SAF's requirements expanded at the same time that the size of the overall 18-year-old cohort declined."<sup>201</sup> In addition, Huxley argues that, "mainly because of Singapore's economic success, recruiting regular officers and non-commissioned officers (NCO) has been a perennial problem."<sup>202</sup> He attributes this to the better career prospects and pay packages offered by the private sector. These factors exacerbated the "SAF's need to exploit modern military technology in order to compensate for its manpower constraints."<sup>203</sup> Analysts agree that the SAF was faced with the long-term reality of leaner manpower, smarter personnel, and more females, and this meant that the Porcupine strategy, which was service-centric and depended heavily on a large RSAF and RSN, would no longer be a suitable option moving forward. Singapore thus needed a new military strategy that could reap the synergies of integrated and joint operations, effectively allowing the SAF to do more using technologically advanced platforms but with fewer people.

*e. Technological and Structural Challenges*

Benefiting from Singapore's economic strength, the SAF was able to rely more heavily on technology to maintain its advantage over potential adversaries, support the shift toward joint operations, and also to find a solution for its manpower constraints. Specifically, Singapore adopted the RMA approach, and started investing and planning for this transition since the early 1990s, made possible by the rapid economic growth

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<sup>199</sup> Huxley, *Defending the Lion City*, 122.

<sup>200</sup> *Ibid.*, 95.

<sup>201</sup> *Ibid.*

<sup>202</sup> *Ibid.*, 121.

<sup>203</sup> *Ibid.*, 93.



experienced in the 1980s. However, Loo suggests that although adopting the RMA approach solved one set of problems for Singapore, it brought about a different set of challenges that forced structural and doctrinal changes in the SAF to adapt to the technological evolution. This in turn contributed to the need for a change in Singapore's military strategy.

RMA has enabled the SAF to maintain an overwhelming superiority over potential adversaries in the region through technological advancement and capability upgrades. Nevertheless, "these new types of capabilities require radically different *modus operandi* for their effects to be maximized,"<sup>204</sup> and this has driven the shift in military strategy. The RMA approach is also very expensive. Loo asserts that "for the SAF, this increasing cost of new technologies may result in a form of structural disarmament,"<sup>205</sup> meaning that newer platforms purchased to replace existing ones "would almost certainly be lesser in number"<sup>206</sup> due to the astronomical costs involved. To Loo, "a case in point is the Singapore Air Force's decision to replace its existing fleet of over 40 F-5Es with 12 F-15SGs."<sup>207</sup> Fewer platforms have also meant that attrition, if any, would be less acceptable. Such considerations may also result in military planners opting for less risky and higher payoff alternatives to meet their objectives. As such, having fewer but technologically more advanced platforms may help alleviate the manpower issues faced by the SAF, but it has introduced other challenges. Previous doctrines adopted as part of the Porcupine that were dependent on specific platforms or numbers for successful execution had to be changed. Thus, these changes rendered the Porcupine ineffective and have driven the need for a new military strategy.

### **3. Change of International Norms and Expectations**

How the world viewed Singapore mattered to the young nation's leaders, who were keen to improve Singapore's international standing and image. As such,

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<sup>204</sup> Loo, "The Management of Military Change," 74.

<sup>205</sup> *Ibid.*, 77.

<sup>206</sup> *Ibid.*

<sup>207</sup> *Ibid.*

Singapore's leadership became increasingly responsive to any changes in international norms and expectations, in particular, the involvement of military beyond conventional roles and also the perception of Singapore as a responsible member of the international community.

*a. Military Involvement Beyond Conventional Roles*

Since the 1990s, the SAF has gradually become more involved in operations other than war, both regionally and internationally. This coincided with the “increasing social and international expectation of military involvement in delivering humanitarian assistance”<sup>208</sup> and in international efforts against the threats of terrorism and piracy that were emerging at that time. Prior to the 1990s, Singapore's military resources were limited to conventional roles, focusing mainly on deterrence, self-defense, and maintaining security in the sub-region. The SAF's increasing involvement beyond its conventional roles therefore reflected the Singaporean leadership's willingness to cater to international norms and expectations, albeit within limits. The challenge, however, was that neither the SAF nor the Porcupine strategy was designed to manage this long term. Changes were thus required.

As evidence of the shift in mindset, “Singapore's defense minister, Ng Eng Hen, has argued that the involvement of militaries in [Humanitarian Aid and Disaster Relief] (HADR) is no longer the exception but has increasingly become the norm.”<sup>209</sup> In this aspect, Singapore's leaders were keen to assure international partners that Singapore “contribute[s] not in words but in deeds.”<sup>210</sup> Singapore's Deputy Prime Minister Teo Chee Hean stressed, “Without being able to contribute to the [regional and international] security architecture and having a capable SAF, Singapore would play a much more diminished role and we would not have the same voice at the table.”<sup>211</sup> Increasingly, Singapore's leadership has shared the view that the “SAF's usefulness is not defined

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<sup>208</sup> Chian, “Should the SAF Maintain Its Existing Focus on Full-Spectrum Dominance?” 33.

<sup>209</sup> See Seng Tan, “Mailed Fists and Velvet Gloves,” 349.

<sup>210</sup> Chian, “Should the SAF Maintain Its Existing Focus on Full-Spectrum Dominance?” 36.

<sup>211</sup> *Ibid.*, 37.

solely in terms of deterrence against external attack but equally that of creating international space for Singapore and ensuring for itself freedom of manoeuvre.”<sup>212</sup> In addition, Huxley asserts that by the early 2000s, there were strong indications that the United States was keen “to display its soft power in terms of leading and funding relief and reconstruction efforts”<sup>213</sup> in Southeast Asia. Singapore’s active participation and regional leadership in HADR would help anchor its position as a partner of choice with the Americans. As such, “to satisfy these new roles, the SAF needed to become more flexible in doctrinal and strategic thought.”<sup>214</sup> In addition, due to the nature and operating conditions expected of operations other than war, the navy stood out as the most effective and practical way by which Singapore could achieve this new objective at a sustainable level, especially when these operations are conducted far beyond Southeast Asia.<sup>215</sup> These reasons helped pave the way for the Dolphin strategy, which in comparison to the Poisonous Shrimp and the Porcupine, was designed to be more adept at managing emerging non-conventional requirements.

***b. Responsible Member of The International Community***

Singapore is a small country with big ambitions. Its leaders are cognizant that besides being able to defend itself from aggressors, the nation’s success and long-term survivability depend on it being an “active, constructive player which seeks to add value and be relevant to other countries”<sup>216</sup> on the international stage. Inevitably, Singapore’s enthusiasm in contributing to the international community has also been influenced by economic considerations as the nation-state “has managed to thrive by interweaving its economy into the existing international system.”<sup>217</sup> By the 1990s, Singapore had become

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<sup>212</sup> See Seng Tan, “Mailed Fists and Velvet Gloves,” 338.

<sup>213</sup> Huxley, “Southeast Asia in 2004,” 15.

<sup>214</sup> Chian, “Should the SAF Maintain Its Existing Focus on Full-Spectrum Dominance?” 34.

<sup>215</sup> Koh, “Seeking Balance,” 77.

<sup>216</sup> “Singapore Won’t Accept Being Powerless on International Stage as Its Fate: PM Lee.” *Straits Times*, November 27, 2015, <http://www.straitstimes.com/singapore/singapore-wont-accept-being-powerless-on-international-stage-as-its-fate-pm-lee>.

<sup>217</sup> Chian, “Should the SAF Maintain Its Existing Focus on Full-Spectrum Dominance?” 34.

“firmly committed to its preservation,”<sup>218</sup> including the protection of “institutions and norms reinforcing the mechanisms of global trade,”<sup>219</sup> of which “90 per cent of the world’s commerce is carried by sea.”<sup>220</sup> Singapore’s leaders have also “recognize[d] that it is not possible for any one country to protect its own shipping in all the world’s key sea lanes.”<sup>221</sup> Thus, to benefit from international cooperation and protection, Singapore needed to contribute as a “responsible stakeholder and not [behave] as a free rider.”<sup>222</sup> Therefore, a new strategy was needed that enabled the island-state to play a more active role as a “responsible member of the international community.”<sup>223</sup> Such requirements facilitated the shift to the Dolphin strategy.

### C. SUMMARY

The combined effects of the new security environment, economic growth, and to a lesser extent, changing international norms and expectations made it necessary for Singapore to make the transition from the Porcupine to the Dolphin strategy in the 2000s. Compared to the first shift to the Porcupine, the considerations and options available to Singapore during the second shift to the Dolphin were vastly very different. In particular, as Singapore underwent rapid economic growth from the 1980s onwards, more options became available to the nation-state in managing its vulnerabilities and security concerns. Singapore’s successful economy increased the stakes of conflict for the young nation; more than ever, ensuring Singapore’s national security now included protecting its economic infrastructure, securing investor confidence, and contributing to regional and international stability as well. In addition, as Singapore became more integrated and

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<sup>218</sup> Chian, “Should the SAF Maintain Its Existing Focus on Full-Spectrum Dominance?” 34.

<sup>219</sup> Ibid.

<sup>220</sup> Andrew Tan, “The Emergence of Naval Power in the Straits of Malacca,” 120.

<sup>221</sup> Ibid.

<sup>222</sup> “Special Feature: S.T Lee Project on Global Governance. In Conversation,” LKY School of Public Policy, accessed June 15, 2016, [http://lkyspp.nus.edu.sg/wp-content/uploads/2013/04/TK\\_CAG\\_Feb-2009.pdf](http://lkyspp.nus.edu.sg/wp-content/uploads/2013/04/TK_CAG_Feb-2009.pdf).

<sup>223</sup> “MFA Press Release: Remarks by Minister for Foreign Affairs K Shanmugam, 2nd Minister for Foreign Affairs Grace Fu, SMS for Foreign Affairs Masagos Zulkifli and SPS for Foreign Affairs Sam Tan in Parliament during the Committee of Supply Debate,” Ministry of Foreign Affairs, Singapore, March 5, 2014, [https://www.mfa.gov.sg/content/mfa/media\\_centre/press\\_room/pr/2014/201403/press\\_20140305.html](https://www.mfa.gov.sg/content/mfa/media_centre/press_room/pr/2014/201403/press_20140305.html).

interdependent with the rest of the world, economic growth contributed to newer types of security concerns and also made Singapore's leadership more responsive to international pressures. The shift to the Dolphin strategy reflected these considerations. The result is a military strategy that is not only equally adept at addressing both conventional and non-conventional threats, it also contributes to confidence building and cooperation amongst regional and international stakeholders. In addition, while the Dolphin has continued to benefit from the supply of technologically advanced weaponry from Israel's dynamic military industries, there has been a deliberate effort on the part of Singapore's leadership to preserve the existing stable conditions conducive for continued economic growth. That has necessitated a shift away from the aggressive Israeli-like image associated with the Porcupine to the projection of "we are willing to be friends with everyone" as the primary message of the Dolphin.

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## IV. CONCLUSION

This thesis analyzed the reasons for the two shifts in Singapore's military strategy as separate case studies, testing the relative strengths of the two hypotheses articulated in Chapter I. Research for this thesis revealed that the evolution of Singapore's military strategy was driven by three key factors: change of security environment, change of economic conditions, and to a lesser extent, change of international norms and expectations. The evidence examined in Chapters II and III support the argument that the change of security environment was the underlying driving force for the first shift, while the change of economic conditions was the main cause of the second. Significantly, these findings contribute to the broader understanding that a country's security environment is not necessarily the most influential in shaping its military strategy. Changes in economic conditions, once the country's economic potential has been sufficiently realized, can have a similar, if not greater, impact on its military strategy as well. In addition, by examining how the three key factors identified drove the evolution of Singapore's military strategy, this thesis was also able to explain how the Poisonous Shrimp, the Porcupine, and the Dolphin came to exist in their eventual forms. In turn, each phase of Singapore's military strategy also shaped its corresponding generation of the SAF. In the process, by showing how the Porcupine strategy was shaped by specific requirements that the Poisonous Shrimp could not address, this thesis established that the first shift was indeed substantive and necessary. This is possible because each evolutionary stage of Singapore's military strategy was designed in response to the challenges preceding it, and also in anticipation of expected threats moving forward. In concluding the thesis, this chapter is organized into three sections. Section A summarizes the findings to explain how the conclusion was derived. Next, Section B provides a concluding analysis by comparing the relative strengths of the three key factors discussed and their overall impact as drivers of change in Singapore's military strategy. Finally, from the insights drawn from the preceding two sections, Section C offers an analysis of a potential third shift.

## **A. SUMMARY OF FINDINGS**

What contributed to the shift from the Poisonous Shrimp to the Porcupine? Were the factors that drove the first shift similar to those that drove the second shift, or were they drastically different? This section summarizes the key findings as a lead-up to the concluding analysis in Section B of this chapter.

### **1. The First Shift**

From the onset, the Poisonous Shrimp seemed like a desperate attempt to quickly devise a workable strategy; it also reflected the lack of experience and readiness on the part of Singapore's pioneer leadership to undertake the responsibility of Singapore's defense. Besides, the Poisonous Shrimp was designed with certain assumptions, like the expectation that the provisions in the Separation Agreement with Malaysia, such as those concerning the water supply, would be honored without threats, but this was not to be. It quickly became clear to Singapore's leadership that a change in military strategy was required. The shift from the Poisonous Shrimp to the Porcupine thus took place in the early 1980s against the backdrop of sub-regional tensions that had been a persistent feature since Singapore's independence in 1965. This resulted in a consistency between the Poisonous Shrimp and the Porcupine on the use of the SAF to achieve primarily military-related outcomes on specific adversaries. Such a consistency existed because the specific threats faced in the eras of the Poisonous Shrimp and the Porcupine, though different, remained within the realm of territorial and sovereignty-related security concerns. Singapore's leadership believed such concerns were best resolved through the use of Israeli-styled aggressive military force when required. Despite the similar focus, however, both strategies were designed to achieve their respective objectives in drastically different ways. The Poisonous Shrimp was designed for passive deterrence while the Porcupine strategy was designed for active deterrence. As argued in Chapter II, this outcome can be attributed to the two key factors that drove the shift to the Porcupine, which were a change of security environment and the change in economic conditions.



***a. Change of Security Environment***

Since independence, Singapore's strategic planners and leadership have consistently considered the nation-state's security environment as a key factor in shaping its military strategy. The Poisonous Shrimp strategy was designed primarily in response to Singapore's security environment early in its independence. Up to the early 1970s, Singapore faced a security environment that its leadership perceived to be threatening to its existence as a sovereign nation. This perception thus shaped the Poisonous Shrimp strategy to achieve the primary objective of ensuring survival by deterring invasion. In the years leading up to the 1980s, Singapore grew economically, but its security environment worsened and the Poisonous Shrimp strategy could no longer adequately deal with the changes that were taking place. Two key changes contributed to this new security environment for Singapore. First, sub-regional relations deteriorated. The heightened tensions, mainly with Malaysia, were characterized by territorial disputes over Pedra Branca and threats to cut off the supply of water to Singapore. Malaysia and Indonesia also attempted to apply political pressure on Singapore, infringing on its sovereignty. The strategy of deterring invasion alone was clearly insufficient to protect Singapore's national interests. Second, there were emerging regional and extra-regional security threats, forcing Singapore to consider projecting its military influence beyond the sub-region. As a result, the change of security environment became the main driver for the shift to the Porcupine strategy, with Singapore's economic growth facilitating the shift by funding necessary military capability upgrades.

***b. Change of Economic Conditions***

In the period leading up to the early 1980s, Singapore faced more immediate and existential threats stemming from the changes in the security environment. As such, economic factors, though important, were limited to a supporting role in driving the shift to the Porcupine; nonetheless, this was also the period in which Singapore's leadership and military planners alike began to pay more attention to how its military strategy could potentially affect the nation's goal of sustained economic development. Two key factors contributed to the change of economic conditions in Singapore, which when combined

with the pressures created by the change of security environment, made the shift to the Porcupine compelling. First, Singapore's rapid economic growth made the island-state increasingly dependent on its foreign economic partners and international investors. It thus became vital for Singapore to shed the defeatist Poisonous Shrimp for another strategy that could secure investor confidence in the long term. Second, Singapore's investments in its ports and its growing dependency on seaborne trade made it necessary for the island-state to expand its security focus to include the maritime domain. These economic factors exposed further weaknesses of the Poisonous Shrimp strategy, reinforcing the need for change.

## **2. The Second Shift**

The shift from the Porcupine to the Dolphin was officially declared in the early-2000s, and though it occurred during a period of uncertainty characterized by key leadership transitions in the sub-region, territorial disputes, and post-Asian Financial Crisis in 1997, the Dolphin strategy did not project an aggressively deterrent military posture similar to both the Poisonous Shrimp and the Porcupine. Instead the Dolphin was designed with a focus on fostering military cooperation and confidence building on both the regional and the international stage. Notwithstanding these positive features, the Dolphin strategy retained a strong focus on deterrence, albeit evidently in a preventive and less directed approach to specific adversaries. These wide ranging considerations were thus key in shaping the 3G SAF designed for full-spectrum dominance and with an increasing focus on the maritime domain. Significantly, the Dolphin also displayed an increased focus on deterring threats to Singapore's economic interests, an outcome of the economic considerations that drove the second shift, which was evidently lacking in the first. As argued in Chapter III, the shift to the Dolphin strategy was driven by three key factors: change in the security environment, change of economic conditions, and to a lesser extent, a change in international norms and expectations.

### ***a. Change of Security Environment***

In the second shift, the change of security environment remains a key driver; however, compared to the first shift, it was less influential. This observation can be

attributed to the general improvement of Singapore's security environment in the second shift, which contrasts with the deterioration of security environment experienced in the first. The changes to Singapore's security environment experienced mainly during the 1990s drove the second shift in two ways. First, improved sub-regional relations gave Singapore's strategic planners more confidence and flexibility to adopt a less aggressive posture to achieve deterrence in the Dolphin strategy. In part, this improvement in sub-regional relations was bolstered by respective sub-regional leaders' desire to preserve the peace and stability that had contributed to the shared economic growth experienced in the region. Second, the Porcupine strategy was unable to address concerns over the growth of regional navies and the emergence of non-conventional threats beginning in the 1990s, which also had an impact on Singapore's economy. Their combined effects thus forced Singapore to broaden the focus of its military strategy to include the deliberate protection of Singapore's economic interests and related infrastructure, which facilitated the shift to the Dolphin strategy.

***b. Change of Economic Conditions***

When compared to the first shift, it is evident why the change in economic conditions emerged as the most significant factor in driving the shift to the Dolphin. Besides indirectly influencing and facilitating the evolution, changes in economic conditions had a direct impact on the shift to the Dolphin strategy as well. Five key factors were identified. First, consistent economic growth raised the opportunity costs of conflict for Singapore and the region, regardless of the length or magnitude of the conflict. This made the aggressive posture of the Porcupine strategy increasingly unattractive to Singapore's leaders and citizens alike. Second, economic power enabled Singapore to seek alternative means and suppliers to reduce the nation's dependencies on Malaysia for food and water. Such changes facilitated increased flexibility in policy making and in evolving Singapore's military strategy. Third, shared economic growth in the region resulted in changes in expected operating conditions, complicating existing military plans. In particular, the combined effects of urbanization in Johor and the modernization of the MAF made it impossible for the SAF, during war, to successfully execute pre-emptive strikes in the direct manner as intended in the Porcupine strategy

without severe repercussions. Fourth, as a result of economic policies and growth, the SAF faced increasing manpower constraints. This factor made the manpower-heavy Porcupine strategy unsuitable and created pressures for Singapore to adopt a new strategy that leveraged more on technology to compensate for the lack of manpower. Fifth, also as an outcome of economic considerations, the SAF adopted the RMA approach, which resulted in structural and doctrinal changes. These changes were necessary but conflicted with the design of the Porcupine strategy and thus necessitated a change in strategy. Separately, economic factors also appear to have shaped Singapore's security environment and its considerations to comply with international norms and expectations.

*c. Change of International Norms and Expectations*

As a driving force for the shift to the Dolphin strategy, a change in international norms and expectations was not as influential compared to the changes in security environment and economic conditions. Its impact, however, was significant enough not to be discounted. Two key factors contributed to the change. First, beginning in the 1990s, there was an increasing global expectation for militaries to contribute beyond their conventional roles, particularly in the areas of Search and Rescue and HADR. Second, as Singapore's economy grew increasingly interwoven with the international system, there was a growing concern on the part of Singapore's leadership for the island-state to be seen as a responsible member of the international community so as to benefit from international cooperation and protection. This required Singapore's active participation in international efforts to fight terrorism and piracy in theatres beyond traditional areas of concern. The Porcupine was a conventional military strategy focused primarily on using the SAF to achieve military outcomes on potential adversaries and thus was unsuitable to meet these new objectives, paving the way for the Dolphin.

**B. CONCLUDING ANALYSIS**

This section analyzes the relative strengths and overall impact of the security environment, economic conditions, and international norms and expectations as drivers for change in Singapore's military strategy.

## **1. Security Environment**

Prior to the 1980s, Singapore's existence as a sovereign state was most threatened by its security environment; when the security environment deteriorated, however, the Poisonous Shrimp strategy became inadequate and had to be replaced. It was thus unsurprising that the changed security environment would feature as the main factor that drove the shift to the Porcupine, even as the importance of economic considerations was rapidly growing. By the late 1990s, however, Singapore's economy was booming at the same time that its security environment was also becoming less threatening; in terms of its influence, the need for Singapore's economic interests to be more seriously integrated with its military strategy grew considerably. New challenges also emerged as a result of Singapore's economic growth, which the Porcupine strategy was ineffective in dealing. As such, though it remained important, the impact of the security environment on the second shift was thus notably reduced. Nonetheless, the transition to the Dolphin strategy also occurred during a period of relative uncertainty due to the emergence of unconventional threats, such as terrorism and piracy, which posed serious challenges to Singapore's territorial and economic security. As a result, the Dolphin retained a strong deterrent factor, albeit with a greater focus on the maritime and non-conventional aspect. In sum, Singapore's security environment has been a consistent influence on the evolution process of the country's military strategy, and it is likely to remain as such; it took a less prominent role in the second shift due to the comparatively more benign threat environment, which coincided with the maturity of Singapore's economy. This dynamic afforded increased flexibility and capacity to broaden the scope of Singapore's military strategy in the shift to the Dolphin.

## **2. Economic Conditions**

In the first shift, Singapore's economy, though undergoing rapid growth, was not developed enough to make a considerable impact on its military strategy and thus played a supporting role. In contrast, the change of economic conditions stood out as the most influential factor in the second shift. This factor not only caused direct and indirect pressure for change to the Dolphin, it contributed to shaping Singapore's security

environment and the nation's general conformance to international norms and expectations as well. The shift to the Dolphin was also assessed to be more drastic than the first, primarily because it represented Singapore's first step away from an aggressive approach to ensure its security. This shift toward a less aggressive posturing of its military strategy can be attributed to two reasons. First, due to generally improved relations with its neighbors, there was more impetus to reduce tension and preserve the peace and stability that was vital in facilitating Singapore's rapid economic growth. Second, in terms of importance, Singapore's focus on economic security finally "caught up" with its traditional emphasis on territorial security. By the 1990s, Singapore's economy had become so important that any attempt to cripple its economy, whether by conventional or non-conventional means, was considered by the country's leaders to be equivalent to a direct territorial attack. These two outcomes are key in understanding how Singapore's economic interests gradually became increasingly integrated with its military strategy.

The comparison of both shifts also revealed a strong and mutually reinforcing relationship between Singapore's security environment and economic conditions, with notable examples observed over the past 50 years since the nation declared independence. In the early years, concerns over security environment influenced economic policies and investments in Singapore's defense industries and renewable water technologies despite doubts on the economic benefits of such policies. Economic crisis in the late 1990s did little to derail the plans for military capability upgrades and transition to the Dolphin strategy. The pursuit of these plans reflected Singapore's focus on maintaining its military advantage over potential adversaries and the importance of the economy in ensuring it. This relationship strengthened with the consistent economic growth experienced in Singapore and in the region, and it is likely to persist moving forward, continuing to shape the evolution of Singapore's military strategy.

### **3. International Norms and Expectations**

The pressure on Singapore to conform to international norms and expectations became strong in the early 2000s even as the region was recovering from financial crisis

in the late 1990s. The emergence of threats such as maritime piracy and terrorism also exacerbated Singapore's sense of vulnerability, both territorially and economically. The shift to the Dolphin amid such circumstances thus reflects a silent confidence in the island-state's perception of its economic strengths and the security climate in the sub-region; this coincided with the Singaporean leadership's acknowledgment that the 2000s presented a window of opportunity to strengthen Singapore's international standing, contributions, and thus relevance to the world. This was an opportunity Singapore's leaders were eager to leverage. In sum, as a factor on its own, the change of international norms and expectations would not be able to exert sufficient pressure on shape Singapore's military strategy. Singapore's pragmatic approach ensures that its leadership prioritizes against threats to its security environment and economic interests, both of which, by the 2000s, have come to be considered existential. Combined with security and economic considerations, however, international pressures can play an important role in shaping the evolution of Singapore's military strategy.

### **C. WHAT'S NEXT, SINGAPORE?**

This thesis was not intended to be predictive; however, it does provide important analyses and insights to what can be expected of Singapore's next shift in military strategy.

#### **1. Key Assumptions and Expected Drivers of the Next Shift**

If current regional and global trends persist, it is likely that economic factors will continue to be the most influential factor driving the next shift in Singapore's military strategy. This assumption acknowledges the importance of consistent economic excellence in ensuring political and social stability within the nation-state, and in fueling the SAF's capability and technological advancement so as to maintain military superiority over potential adversaries. As such, Singapore's leadership and strategic planners will have to pay special attention to changes in economic conditions so as to facilitate uninterrupted growth while at the same time protect Singapore's economic interests by ensuring SLOC security and contributing to regional and international stability. Economic considerations

and other threats to territorial security are thus expected to continue to be integrated as part of Singapore's military strategy.

Like the factors that drove the second shift, change of security environment will remain a close second in terms of influence, ensuring that Singapore's next military strategy maintains an even focus on both conventional and non-conventional threats. This assumes that sub-regional relations will likely remain warm despite recent domestic issues in Malaysia, affording Singapore the capacity to invest more focus and resources in strengthening against terrorism and cyber-related threats. Regionally and internationally, though, there are causes for concern. In particular, there is increasing uncertainty over China's ambitions in the South China Sea, and also concerns about the United States' commitment in Southeast Asia and as a world leader after the 2016 U.S. presidential elections. As such, amidst such sentiments of uncertainty, it is likely that the RSN and the RSAF will continue to play crucial roles in enhancing Singapore's strategic depth and at the same time facilitate a wider range of opportunities to foster military cooperation and confidence building in the region and with other international partners.

## **2. What Are the Options?**

When asked what he thought the next zoological analogy for Singapore's military strategy might be, Loo suggested the "Bee."<sup>224</sup> Loo reasoned that, "Bees are highly organized, social animals, who attack enemies by swarming against the enemy and driving it off with multiple stings."<sup>225</sup> His prediction is also based on the analysis that the SAF seems likely to develop toward adopting "smaller combat teams swarming against the enemy."<sup>226</sup> Alternatively, the next phase of Singapore's military strategy could also adopt the form of an "Octopus."<sup>227</sup> The idea was discussed in an interesting BBC article written by Christopher Mims in which Mims compared the analogy of the "Octopus" to

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<sup>224</sup> Loo, "Zoological Analogies and Military Strategy."

<sup>225</sup> Ibid.

<sup>226</sup> Ibid.

<sup>227</sup> Ibid.



the Petraeus doctrine.<sup>228</sup> Mims asserted that, “The Petraeus doctrine is exactly the sort of thing an octopus would do. Despite its well-organized central nervous system, many of an octopus’s reactions are decentralized. Its individual cells make their own decisions for dealing with the immediate situation—enabling, for example, the invertebrate’s famously varied camouflage.”<sup>229</sup> While both the analogies of the “Bee” and the “Octopus” are by no means the only possible options moving forward, they do exhibit attractive features that are also in line with the expected developmental trajectory of the SAF. The “Bee” and the “Octopus” are thus credible candidates for the next evolutionary stage of Singapore’s military strategy.

Considering the key assumptions discussed, and the expected drivers of Singapore’s next shift in military strategy, the “Octopus,” rather than the “Bee,” stands out as the more likely of the two because it espouses a more adaptive, flexible, and intelligence-driven approach, capable not only of responding to the changes in Singapore’s economic conditions and security environment, but also in managing the “biggest dangers,”<sup>230</sup> which Mims asserts are those threats that have yet to be identified.<sup>231</sup> What makes the “Octopus” analogy particularly attractive is that one of its key tenets is based on the concept of “redundancy,”<sup>232</sup> which gives the strategy an added flexibility to adapt to emerging threats. Mims elaborates: “Defensively and offensively, an octopus has no shortage of coping mechanisms—camouflage, powerful arms, intelligence, a sharp beak, symbiotic toxins, and a cloud of ink.”<sup>233</sup> Such a concept also would take the 3G SAF’s current goal of achieving full-spectrum dominance one step further, leveraging on various multi-role military capabilities so as to excel in both conventional military missions and non-conventional operations when required.

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<sup>228</sup> Loo, “Zoological Analogies and Military Strategy.”

<sup>229</sup> Christopher Mims, “What the Octopus Can Teach Us about National Security,” BBC, August 3, 2012, <http://www.bbc.com/future/story/20120802-military-tactics-from-the-octopus>.

<sup>230</sup> Ibid.

<sup>231</sup> Ibid.

<sup>232</sup> Ibid.

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